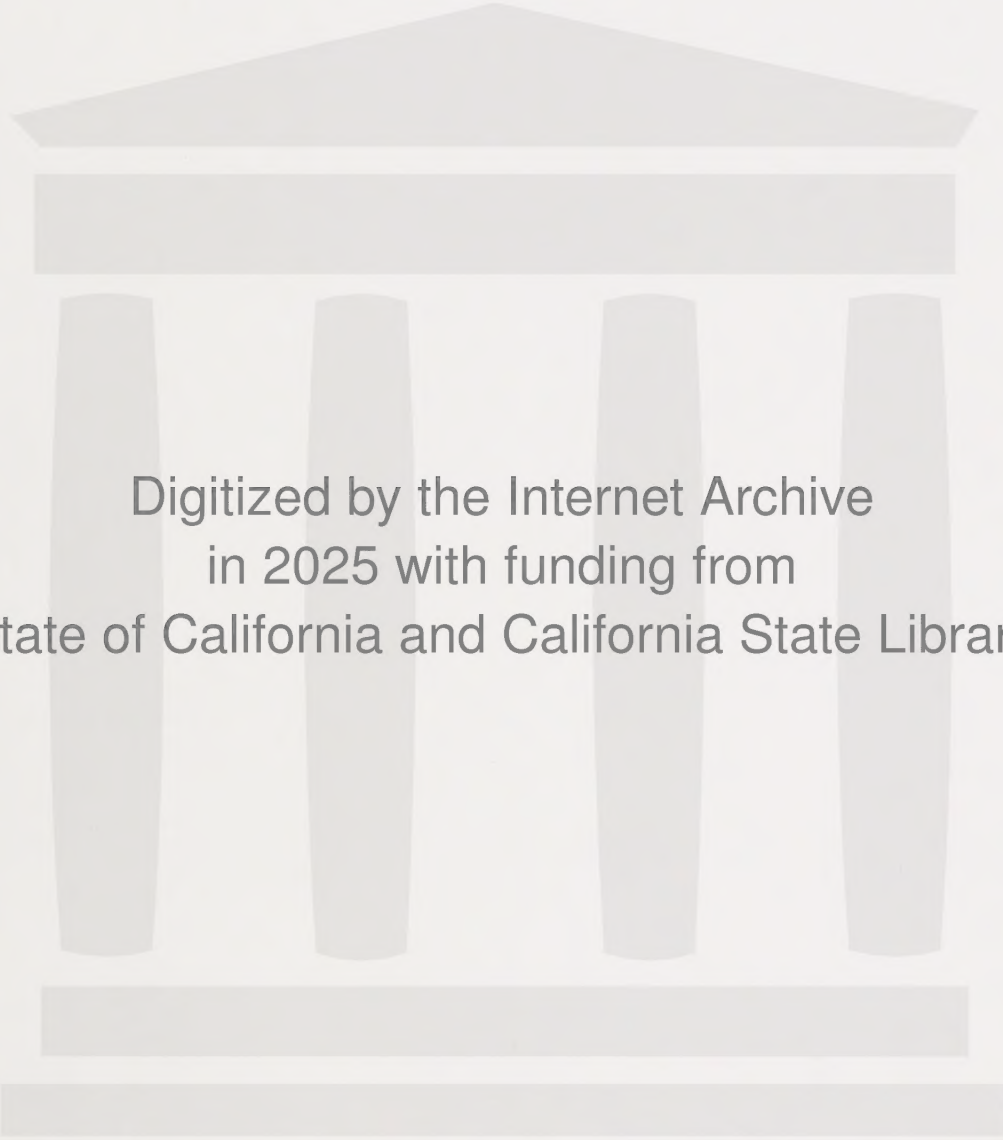


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INTRODUCTION

General planning programs are not new to Antioch. A Master Land Use Plan was prepared for the City in 1955. However, the rapid population increase and major economic changes that have occurred since 1960 in Central Contra Costa County, and particularly the rapid rate of growth in Antioch since 1970, necessitated a new look at Antioch's future. Antioch's land use policies have changed considerably since the adoption of the Master Land Use Plan in 1956. The City Council recognizing these factors, coupled with the need to check the plight of uncontrolled growth and community development and the importance of meeting the current State legislative requirements engaged the firm of Lampman and Associates to prepare a long-range comprehensive General Plan for the City of Antioch. These State requirements are included in Appendix A of this General Plan.

The comprehensive General Plan, as adopted by the City Council establishes the City's policy as to how the City of Antioch should grow and develop. The report specifically spells out the physical development policies and the action programs necessary to protect and enhance those features and services which contribute to the quality of life enjoyed by Antioch citizens.

CITY OF ANTIOCH GENERAL PLAN PROCESS

*The Steps Undertaken In The Process Of
Developing The Antioch General Plan Are Outlined Below*

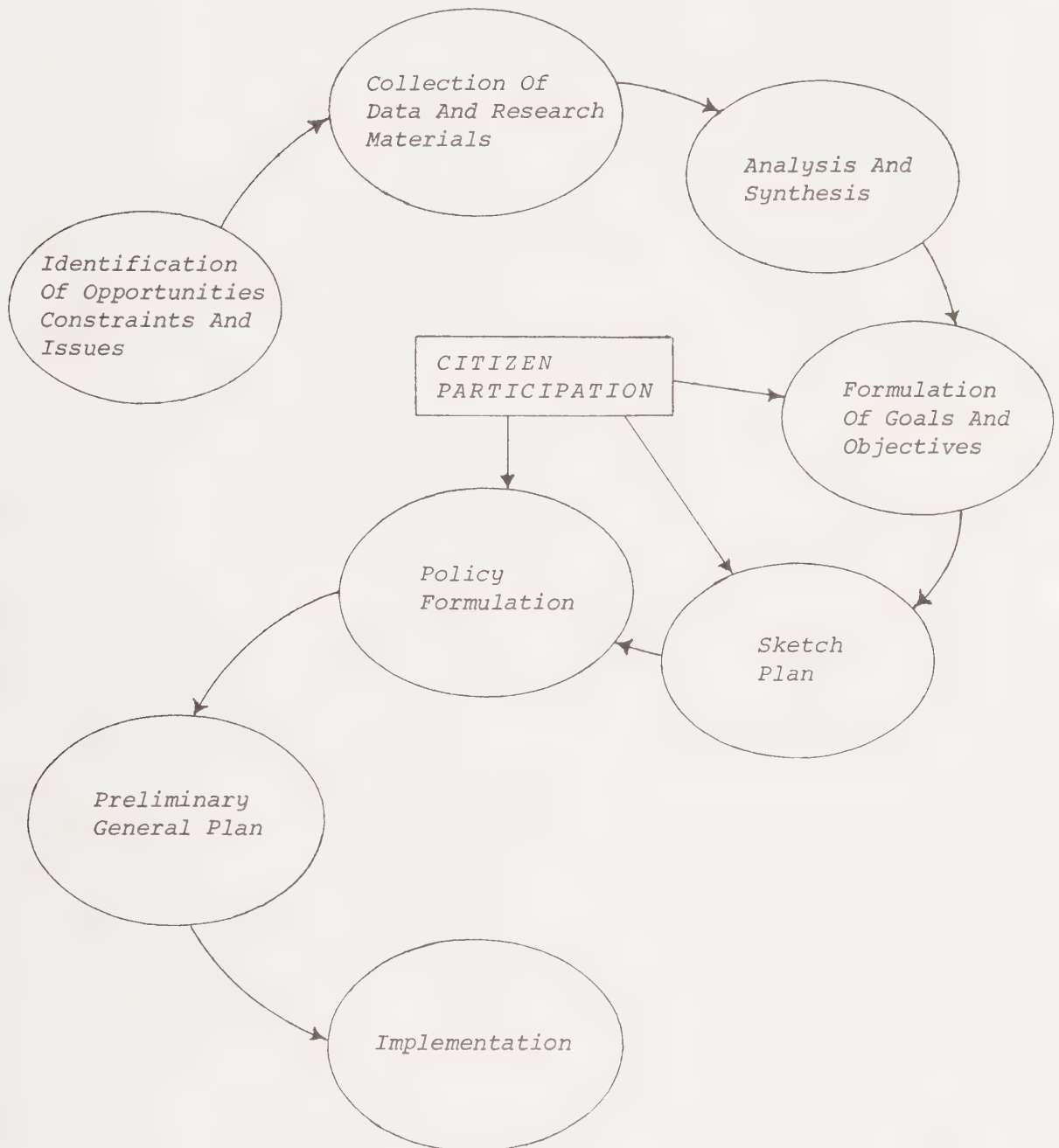


FIGURE I - 1

This summary report describes the planning process; contains the overall framework for planning in Antioch; and summarizes the major goals, policies, proposals and programs of the General Plan.

The Antioch General Plan is not a precise plan but rather a policy plan which sets forth a series of written statements that define the direction and character of future development and establishes the actions necessary to attain the desired development. Unlike a detailed plan which shows the exact land use pattern to occur, the General Plan will indicate the general location of land uses and their inter-relationship to policy. In short, the Antioch General Plan constitutes an expression of policies, i.e., goals, objectives, standards and principles, as a basis upon which detailed development decisions and specific land use proposals can be made.

The General Plan will require periodic review and updating. Development proposals which represent major changes to existing policies can be analyzed for their impact upon existing community development and facilities. The cumulative effect of a series of smaller changes can also be gauged and facilities upgraded when called for by City standards. The results of these appraisals should be reported to the Planning Commission and City Council. Under current State law each mandatory plan element can be amended no more than three times per year. In order to keep the plan current with the major overall growth and physical development policies of the community, it should be systematically reviewed annually.

Implementation of the plan is primarily accomplished through the application of zoning and subdivision ordinances, site development standards, capital improvements programming and engineering requirements. Recommendations for implementation of this plan are included in the following section of this report.

THE GENERAL PLAN PROCESS

The General Plan process can be conceptually divided into the following steps: (1) Identification of opportunities constraints and issues, (2) Collection of data and research

materials, (3) Analysis and Synthesis of research materials, (4) Formulation of goals and objectives, (5) Sketch Plan development, (6) Policy Formulation, (7) Formulation of Preliminary General Plan map and text; and (8) General Plan implementation.

In practice, these are not discrete steps and the sequence may vary. Goals and Objectives are refined as the process proceeds. Feedback among the phases is continuous. Work on plan formulation often indicates the need for additional information. Each step of the process is strongly interconnected with all the others especially citizen participation, as indicated in the diagram by the monitoring of several steps. Citizen participation, staff review, public input and reaction are a key part of every step in the planning process (Refer to Figure I-1).

THE PLANNING PROCESS IN ANTIOCH

As in most California cities, the official planning function in Antioch is carried out at three levels of responsibility:

1. The City Council consists of five members, all of whom are elected by the voters of the City. Four councilmen are elected at large for staggered four-year terms, and the mayor is elected at large for a two-year term. The City Council is charged with the basic responsibility for all decisions, and policies within the powers of municipal governments. In terms of planning, the Council adopts and amends the General Plan, decides on zoning amendments and variances and makes final decisions on whatever planning matters may be appealed to it.
2. The Planning Commission is a seven-member body of citizens appointed by the City Council for staggered four-year terms. State law requires each city to have a planning agency, which commonly is an appointive lay commission, as in Antioch. The Planning Commission has the following powers:
 - ° To recommend to the City Council, after a public hearing, the adoption, amendment, or

repeal of a General Plan, or any part thereof, for guidance in the physical development of the city.

- To exercise such functions with respect to reviewing subdivisions, zoning, building, land use, capital improvement programs and related matters as provided for in the City Charter and Ordinances.
3. The Department of Community Development is an arm of the municipal government which was formed in 1973 to inter-relate and coordinate the activities of planning, zoning, building and engineering within the City. The principal responsibilities of this department are: (1) to effectively coordinate all activities relating to community development from the planning stage to the completion of construction; and (2) to provide technical staff assistance to citizens, developers, the City Council, the Planning Commission and other city commissions, boards and departments. The Department of Community Development is comprised of three divisions: planning, building and engineering.

The Planning Division is concerned with matters pertaining to:

- Plans for the immediate and long-range growth and development of the city.
- Research and special studies relating to the preparation of the General Plan, precise plans and zoning ordinances.
- The administration and enforcement of City zoning codes and related ordinances.

The Building Division is concerned with all aspects of administering and enforcing City building codes, other related City ordinances and County Health Department requirements.

The Engineering Division is concerned with the design, maintenance construction and administration of public improvements and facilities within the City.

FUNCTIONS OF THE GENERAL PLAN

POLICY DETERMINATION - An adopted General Plan represents the physical development policy of the City Council.

POLICY EFFECTUATION - The General Plan assists the City Council in making decisions on specific development problems which occur daily based on a comprehensive set of long-range policies previously developed and adopted.

COMMUNICATION - The General Plan provides the vehicle in which the City Council can convey its long-range physical development policy to citizens and leaders of the community. It permits persons and other agencies engaged in development to anticipate the decision of the City Council.

PROVIDE ADVICE - The General Plan is the mechanism through which the City Council receives counsel from its advisors in a clear and concise form to assist them in determining and effectuating long-range development goals.

EDUCATION - The General Plan develops interest in community affairs, provides factual data, indicates future trends, stimulates thinking of future possibilities, explains the operations of local government and imparts the ideals of city planning.

The plan provides the City Manager, the Planning Commission and staff as well as other agencies a basis for their operations as well as guidance to the City Council.

The plan is comprehensive in that all elements which exert an influence on the physical development of the community have been considered and included in the plan.

The plan is general in that a broad and non-specific approach to the community's development and existing problems was applied in the process of creating the plan.

The plan is long range since it is based on a dominant time scale of twenty years and presents a clear statement of the major requirements that must be provided for to promote desirable physical development over a period of two decades.

The plan is flexible since it allows for changes in light of new developments or conditions. A complete and systematic review should be made at least annually to keep the plan up to date.

CITIZEN PARTICIPATION

As an essential part of the planning process, a General Plan Goals Committee was appointed by the City Council to develop goals and objectives for the Antioch General Plan. The citizens' committee met regularly throughout the planning process and played a significant role in the formulation of the goals, objectives and policies as set forth in this General Plan document. The committee also made specific recommendations with regard to rapid transit, city hall and community center locations.

Citizen input was also facilitated by a series of joint study sessions with the City Council, City Planning Commission, the General Plan Goals Committee and interested citizens. The public was also invited to testify before the Planning Commission and the City Council at the time of the General Plan public hearings.

INTERGOVERNMENTAL COORDINATION

One basic foundation for the planning process is an early communication and coordination with those agencies which may affect the growth and development of the planning area. The local General Plan should attempt to harmonize the plans and programs of special districts and other related agencies which have a growth-inducing impact on the community. Section 65304 of the local planning law directs the local

planning agency to "consult and advise with public officials and agencies, public utility companies, civic, educational, professional and other organizations and citizens generally to the end that maximum coordination of plans may be secured and properly located sites for all public purposes may be indicated on the General Plan. The City of Antioch and the planning consultants have communicated and/or coordinated with agencies and organizations for information regarding proposals contained in the Antioch General Plan. A partial list of agencies and organizations contacted in preparing the General Plan are contained in Appendix B.

It is important to remember that what may be considered expendable or at least worthy of higher levels of use at the local level may be of significant interest on a regional, state or even national level.

For example, in the absence of comprehensive and coordinated adopted land use, conservation and open space policies at the state level; the City of Antioch is faced with the difficult task of adopting and carrying out policies which will meet current local area needs and not foreclose the long term options which may be important to the region, state or nation.

The County of Contra Costa is currently developing an East County Plan and has approved an Open Space-Conservation Plan; therefore, the recommendations and policies contained in this plan are intended to be compatible with the goals and future plans of the County. Furthermore, the policies pertaining to future growth and development, park and recreational planning, are consistent with the policies of ABAG and East Bay Regional Park District.

ASSUMPTIONS

General Plan is based upon certain assumptions about the future. The assumptions underlying this plan are:

- ° No major war, epidemic, natural disaster or economic depression will occur in the state or nation.

- ° Public agencies will continue to exercise their responsibilities in the provision of special services.
- ° Economic development and population will increase in the future, at present rates.
- ° Continued economic and population growth will cause increasing pressures for development in the Antioch area which may threaten the existing environmental features and natural resources.
- ° Increased leisure time for the general public will result in increased demands for new or expanded open space facilities for recreational uses.
- ° The City will continue to provide a full range of community facilities which will meet the needs and requirements of their residents for education, recreation, shopping and other public activities.

II

RECOMMENDATIONS

The following are general recommendations of an administrative nature which are designed to insure effectuation of the General Plan in compliance with the California Council on Intergovernmental Relations "Guidelines for Local General Plans."

1. Adopt this General Plan as the official physical development policy document of the City of Antioch.
2. Review the Zoning Ordinance of the City of Antioch and make such ordinance consistent with this adopted General Plan as required by Section 65860 of the Planning Act of the California State Government Code.
3. Forward certified copies of the General Plan document and map, as adopted, to the State Resources Agency and all appropriate State departments.
4. Forward certified copies of the General Plan document and map, as adopted, to the Contra Costa County Local Agency Formation Commission, the Contra Costa County Planning Department and other appropriate County and

regional agencies, including San Francisco Association of Bay Area Governments and East Bay Regional Park District.

5. Initiate planning studies and specific planning activities as provided for in Section 65450 of the State Planning Act to determine solutions to specific area or issue problems as identified in the action programs of the elements of the General Plan summarized below.
6. Conduct a complete and systematic review at least annually to maintain the General Plan in a continually current condition.

Action programs as mentioned in the general recommendations consist of explicit statements of activities to be undertaken in order to implement policies and move toward goals. Briefly, goals consist of an idealized state or condition toward which efforts of achievement are directed. Goals are often abstract and may never be totally attainable; however, they provide a rationale or purpose for the development of basic policies. Policies are the link between goals and program actions which provide a distinct basis for decision making. The various action programs to implement the basic policies and objectives of General Plan Elements are summarized in the ensuing outline. These action programs will serve to guide staff, appointive boards and commission, consultants and citizen participation groups as well as the City Council in choosing tasks designed to implement the General Plan.

A. ENVIRONMENTAL RESOURCE MANAGEMENT ELEMENT

1. Open Space-Conservation

- a. Instruct staff to prepare an Environmental Resource Management Ordinance which would consist of a series of detailed parcel maps, use restrictions and performance standards for resource management districts related to all natural resource components, including prime agricultural soils, water resources, hazardous lands, mineral

resources, vegetation and wildlife, historical, cultural and archaeological resources and adoption of such ordinance as the mechanism to implement the ERME Open Space-Conservation Plan.

- b. Zone all areas identified as Resource Management to an appropriate classification based on the technical inputs of the General Plan and the provisions of the adopted Environmental Resource Management Ordinance.
- c. Require detailed reclamation plans of all future sand and gravel extraction operations. These plans should carry a time limit for phased rehabilitation of all operations.
- d. Restrict development in areas possessing valuable mineral resources. Until such time as comprehensive mineral resource data is available for the Antioch area, a mineral and geological statement should be required for all urban development.
- e. Continue to require developers to dedicate a reasonable amount of land (i.e., as determined by the provisions of the Environmental Resource Management Ordinance) suitable for permanent open space or provide in lieu fees for the acquisition of property appropriate for open space use and active park use.
- f. Continue to require the preparation of Environmental Impact Reports on all public and private projects.
- g. Establish a Historical Commission to coordinate with the Historical Society of Contra Costa County and the Society of California Archaeology on matters related to historical, archaeological and cultural resources in the Antioch area. The Commission's duties would include the development of a program plan for the preservation of such sites and implementation of such a plan.

- h. In connection with the Environmental Resource Management Ordinance the City should utilize the California Land Conservation Act (i.e., Williamson Act) where possible to preserve prime agricultural lands.
- i. Through the enactment of the Environmental Resource Management Ordinance development should be regulated or prohibited in areas in which contamination of watershed lands, water storage areas, or the river water intake line may result.
- j. Instruct staff to develop measures in the Environmental Resource Management Ordinance which will discourage the filling of the few remaining marshes in the Antioch area.
- k. Instruct the staff to incorporate the specific recommendations of the interim Open Space Element which was prepared by WICHE into the provisions of the Environmental Resource Management Ordinance.

2. Scenic Highways

- a. Initiate steps to jointly pursue with the County of Contra Costa the regulation and development of all scenic corridors and highways which lie in unincorporated areas.
- b. Instruct staff to work with Contra Costa County to designate a system of County Scenic Highways in the Antioch area. Request the State to include those highways on the State Scenic Highways Plan with the designation "County Scenic Highways."
- c. Instruct staff to develop a priority ranking of all scenic corridors and a phased development program based upon that priority ranking.
- d. Instruct staff to identify and map the specific boundaries and rights-of-way of each scenic corridor.

- e. Require staff and Planning Commission review of all land use and development proposals which fall within the corridors of the potential scenic highways identified on the scenic highway plan.

3. Recreation

- a. Adopt as a policy guideline a standard of three acres of local park land for every 1,000 residents.
- b. Develop a Master Plan for park and recreational needs which will designate specific locations for park sites throughout the community and determine the method and procedures for acquiring, improving, designing and maintaining such sites.
- c. Instruct staff to develop a priority list for trail acquisition and development so that funds may be appropriated for fiscal year 1975-76.
- d. Instruct staff to coordinate with the East Bay Regional Park District and Contra Costa County in their planning for regional park facilities and a County-wide trail system, particularly where City input is required.
- e. Investigate the feasibility of developing a community park in Antioch which would possess a wide variety of recreational facilities, including a recreation center, tennis and athletic courts, picnic areas and night lighting. This facility should be planned in connection with the community's Master Plan of park and recreation needs.

B. SEISMIC SAFETY ELEMENT

- 1. Initiate a systematic program to rehabilitate or remove all buildings which do not satisfactorily meet the structural or seismic safety standards of the 1933 Riley Act. The Riley Act requires that all buildings, except certain types of dwellings and farm

buildings, meet specific lateral force requirements. Such a program would include minimum repair requirements and minimum structure removal and seismic safety standards.

2. Instruct staff to review the Uniform Building Code in light of recent technological advances with respect to seismic safety.
3. Instruct staff to prepare new ordinances or amendments to existing ordinances and other land use regulations which will mandate the review, evaluation and restriction of land uses that may be subject to undue risk in hazardous areas in Antioch. Regulations should specifically include requirements relating to geologic, seismic, flood and landslide hazards.
4. Instruct the staff to require special geological/seismic or engineering investigations for all proposed structures in areas exhibited on the Geotechnical Land Capability Map as 1AY and 1AD. In connection with this policy, the staff shall require a special geotechnical investigation for all types of land use and structures in the zones transected by the suspected Antioch and Davis Faults. (Refer to Figure VII-3)
5. Require special geological/seismic or engineering investigations for all proposed structures to be utilized for large public assembly, including but not limited to schools, theaters, hospitals and auditoriums. Additionally, future high voltage transmission lines, caustic and toxic gas and fuel lines and inflammable storage facilities should be located in areas relatively safe from seismic hazards.
6. Instruct the staff to require detailed geological soils investigations prior to development, in the specific area where construction is to occur in the hillside area, in order to preclude future slope stability problems.
7. Instruct the staff to incorporate the findings of the Contra Costa County Water District Study pertaining

to seismic activity into this General Plan element when the study is completed.

8. Adopt the detailed recommendations of the Geotechnical Land Capability explanation matrix as set forth in this element of the Antioch General Plan. (Refer to Figure VII-4)
9. Adhere to the recommendations of the City's Emergency Plan to deal with natural emergencies.
10. Continue to refine and revise the Emergency Plan as new information becomes available.
11. Require developers to provide and forward pertinent information on geological and seismic characteristics to the public, particularly with reference to the prospective buyers in the development.
12. Continue to cooperate with Contra Costa County, other County communities and other local jurisdictional agencies (schools, utilities, etc.) to prepare and maintain a joint action emergency preparedness program.
13. Request review of current information and investigations as necessary by the State Geologist and State Mining and Geology Board of the suspected "Antioch Fault" for a determination of the effect of the provisions of Chapter 7.5, Division 2, of the Public Resources Code (Alquist-Priolo Geologic Hazards Zone Act).
14. Establish a moratorium on new construction along the Davis Fault and within the suspect Antioch Fault zone (tentatively 600 feet wide) until or unless specific investigations show the fault to be non-existent or such construction will be safe and unaffected by potential ground rupture.

C. SAFETY ELEMENT

1. Develop those arterial streets as specified by the Circulation Element. Of particular concern is east-west circulation to allow emergency access and exit.
2. Develop an Emergency Plan. (Refer to Seismic Safety Element)
3. In connection with emergency operations, initiate steps to undertake railroad lowering or grade separation feasibility studies of arterial streets which cross the Southern Pacific Railroad. (Refer to Circulation Element)
4. Require all future residential development to install a looped water system of no less than six inches in diameter with appropriately placed fire hydrants to insure adequate support systems for emergency fire protection.
5. Instruct staff to prepare an equipment renewal program so that adequate equipment is always available for emergency operations.
6. Continue to enforce the weed abatement program and expand the control of flammable growing material in the open lands of the community. Encourage the use of the program in the unincorporated areas adjacent to the City.
7. Continue to provide assistance to other agencies with respect to water and boat safety.
8. Instruct staff to annually review the fire safety prevention program within the community and report. Such review should be done in cooperation with the Fire District and Police Departments, State Forestry and other State and County agencies as deemed appropriate.

9. Continue to review development proposals by concerned Police and Fire Departments in order to determine compatibility with this element.
10. Initiate steps to continue a systematic inspection program of all buildings to determine existing and potential fire and other safety hazards within the community.
11. Instruct staff to review the City building and zoning code and make recommendations for incorporating objectives of this element into those codes.
12. Instruct the Fire Department to investigate and report regarding any urbanized area which currently lacks hydrants or insufficiently sized water mains.
13. Grade surface areas next to pipelines so that, in case of rupture, pipelines drain away from surrounding uses.

D. LAND USE ELEMENT

RESIDENTIAL

1. Residential neighborhoods should be zoned for a variety of densities with proposed residential areas allocated to predominantly low density residential development.
2. Residential densities should be decreased if the level of utility systems and street capacities are determined to be inadequate and cannot be upgraded for the subject area.
3. Residential development should be phased in so far as possible through zoning practices, maintenance of area of influence, subdivision review and annexation policy to follow the General Plan into the future as appropriate to timing and sequence of uses in order to maintain a compact urban form and service area.

4. Future schools, parks, churches and other public facilities should be conveniently located in all residential neighborhoods.
5. Design and construction of residential developments, which offer a variety of housing types, lot sizes, and complementary uses through creative and imaginative planning should be encouraged by zoning incentives and flexibility.
6. Hillside areas should be reserved for low residential density to retain the natural environmental features and amenities that contribute to the unique identity of each residential neighborhood by appropriate zoning provisions.
7. Any necessary expansion of the urbanization line, as indicated in the Land Use Map, should be done in the East Antioch area. This area, unlike South Antioch, would be less affected by urbanization since some development already exists.

COMMERCIAL

1. City officials and local merchants should develop programs to revitalize the Antioch Downtown Area.
2. Re-evaluate existing parking requirements to insure adequate off-street parking for all commercial levels. Create special parking districts where needed.
3. Consolidation of strip commercial zoning into planned commercial areas should be pursued.
4. Encourage the grouping of related, compatible uses into overall development complexes or in planned commercial areas through conducive zoning provisions and patterns.
5. Design commercial areas that include parking facilities as well as other facilities for alternative modes of transportation to and from the areas, including pedestrian, bicycle, transit and equestrian access.

INDUSTRIAL

1. Industrial zoning should be established in locations with easy access to major circulation facilities to minimize heavy traffic on local streets through planned residential and commercial areas.
2. Light Industrial zoning provisions should permit those industrial uses which emphasize (or are compatible with) warehousing, testing and research type uses or are controlled manufacturing uses with adequate performance standards.
3. Strict environmental performance standards (i.e., smoke, noise, odor, etc.) should be developed to insure that industrial plants do not cause undue nuisance to residential and commercial facilities in the immediate vicinity or community whole.

INTEGRATED PLANNED COMMUNITY AREA

1. Zoning for this land use should be developed and established in areas where parcel ownership is minimal; natural and man-made resources are prevalent; where accessibility to major transportation is available; and where the area contains a minimum of 200 acres.
2. Uses should be limited to light industrial which do not cause undue nuisance to residential use or a combination of industrial, commercial, and residential.

E. HOUSING ELEMENT

1. Pursue compatibility between housing policies of this General Plan Element and regulatory devices available in the zoning ordinance.
2. Initiate a systematic "Code Enforcement Program" and seek financing for improvement of areas of marginal housing deterioration.

3. Minimize design monotony and layout uniformity in housing development by flexibility through increased use of the Planned Development Zone. Establish zoning provisions to preserve geographic and natural resources, retain natural topography and provide contiguous open space areas.
4. Require the submittal of a complete grading plan in connection with all proposed housing developments in order to provide sufficient information for a full environmental impact assessment on the proposed project.
5. Continue to meet the low and moderate cost housing needs of the City through the use of public, private and/or joint public-private action; offering assistance to developers of low or moderate cost housing by providing necessary information and other available means. Low income housing shall not be concentrated in any one area and any housing, no matter what income group it is intended to serve, must have adequate community facilities available and meet the overall environmental goals of the community.
6. Encourage a program to allow housing for community needs for the fixed income and/or elderly. This program could be warranted in connection with efforts to revitalize the downtown area of Antioch.
7. Adhere to the standards and recommendations of the most current Uniform Building Code and amend as necessary to insure sensitivity to unique local conditions.
8. Develop programs for neighborhood conservation and rehabilitation. Efforts should be directed to:
 - a. Identify and assist responsible leadership groups within the neighborhood.
 - b. Encourage neighborhood participation, especially when action on neighborhood problems arises.
 - c. Identify the needs and desires of the neighborhood

as they change over time and respond accordingly.

9. Instruct staff to investigate ways of meeting housing needs of low and medium income families, including impact of local ordinances and development regulations on both new construction and rehabilitation.
10. Influence other levels of government in resolving major obstacles to the provision of housing, including tax reform and Federal budgeting.

F. CIRCULATION ELEMENT

1. Recognize the arterial and collector designations shown on the plan map and cause those facilities to be developed to the appropriate standards.
2. Institute a feasibility study of railroad lowering or grade separated projects for Somersville Road, A Street and Hillcrest Avenue.
3. Upgrade all existing roads in terms of inadequate pavement, curbs and gutters.
4. Coordinate recreational Trails system of ERME (Refer to Figure VI-13) with vehicular circulation plan as to different characteristics and needs to ensure minimum interface conflict.
5. Integrate pertinent conclusions of recommended Airport study of the Community Facilities Element into this element once the study is completed.
6. Study feasibility of relocating S.F.R.R. to utilize same right-of-way as S.P.R.R.

G. NOISE ELEMENT

1. Request that all law enforcement agencies (i.e., Antioch Police and Contra Costa County Sheriff, etc.) strictly enforce statutes pertaining to motor vehicle muffler systems.
2. Work closely with the Federal Aviation Administration and Contra Costa County Airport Land Use Commission on any matters that might affect noise over Antioch such as changes in flight patterns and type or number of aircraft handled by the field. Evaluate any potential development near the airport as to its characteristic noise compatibility.
3. Initiate action to work with industries in the area to develop sound level suppression measures.
4. Restrict certain noise impact areas to non-residential uses in accordance with the Land Use Element of the General Plan.
5. Make special noise insulating design or site layout a major consideration in issuing building permits.
6. Whenever possible, isolate freeways and highways from residences and schools by noise attenuation barriers, right-of-way design, or by a distance sufficient for the lowering of the noise level to acceptable limits. Establish truck routes which avoid residential, school and institutional areas.
7. Require attenuation properties as a part of the Park and Recreation Commission's design review for new recreational developments such as ball parks, swimming pools, etc. to minimize the noise impact on neighboring land uses.
8. Continue cooperation with the County to develop an all encompassing comprehensive noise ordinance to control community noise, including noise created at the Contra Costa County Fairgrounds.

9. Require open space and/or extensive landscape buffering along major freeways, highways and between heavy industrial uses or other noise sources and existing or future residential uses.
10. The City should support and adhere to all State and Federal legislation designated to abate and control noise pollution. Such legislation shall include the interim noise standards and procedures developed pursuant to Section 109(i) 23 U.S.C. as added to Title 23 by Section 136(b) of the Federal Air Highway Act of 1970 in addition to other legislation listed in this element.
11. Retain the services of qualified acoustical engineers to conduct noise readings throughout the community and develop specific recommendations for noise attenuation; include in this study consideration of other transportation related noise sources including railroads.
12. Develop a monitoring system to establish an acceptable ambient level in the various neighborhoods in the community.
13. Instruct staff to incorporate the findings and recommendations of the detailed noise survey as stated above in objective No. 11 into this element of the General Plan.

H. COMMUNITY FACILITIES ELEMENT

1. Civic Center Complex

It is recommended that a civic center complex be constructed in Antioch to house a broad range of governmental functions. Foremost is the provision of a new City Hall. The existing City Hall is inadequate with regard to sufficient spatial and structural requirements. The General Plan calls for the immediate replacement of the existing City Hall with improved facilities equal to anticipated demand. The proposed civic center should also house other governmental services.

Additionally, the plan recommends the existing post office should be relocated into the proposed Antioch Civic Center. The existing post office is spatially inadequate and requires more suitable headquarters.

Furthermore, the Antioch Civic Center would be an ideal location for representative offices of Federal and State government. An attractive civic complex would lure branches of higher government bodies to locate in Antioch, particularly those bodies with jurisdictional interests in eastern Contra Costa County.

It is recommended that the new civic center be located in the downtown area of Antioch. This will perform a very important role in the revitalization of the central business district; and, of course, a downtown location would be most convenient in terms of available ancillary services for governmental employees. The Antioch General Plan Goals Committee strongly endorsed the downtown area location for the new City Hall because it is consistent with the General Plan goals and objectives supporting a rejuvenated central business district.

2. Community Center

A community recreation and cultural center should be provided for the citizens of Antioch. This could house a day care center, a senior citizens' program, a teen center, adult education and youth activities. It would permit a forum for town meetings and community interaction.

It is further recommended that the community center be constructed in downtown Antioch in conjunction with the proposed Antioch Civic Center. The exact location of the community center, as well as the civic complex, would be determined by the comprehensive urban design study as recommended in the Community Design Element.

3. Public Health and Safety

The General Plan recommends that Fire Station No. 1 on West Tenth Street and Fire Station No. 3 on Gentrytown Drive be supplemented by the following program. Fire Station No. 2 at Lone Tree Way and Putnam should be phased out and moved south and east when warranted subject to seismic and geologic studies of specific sites due to the closeness of the suspected Antioch Fault. The relocation of this station will provide better fire protection service to the future residential and commercial development proposed to the southeastern part of Antioch. The plan also calls for a fire station in the general vicinity of Eighteenth Street and Vera Avenue to serve future residential and industrial development in the eastern part of Antioch. Station locations of these two stations are currently under study by the Antioch Fire Department and are supported in concept by a consolidated fire district. Additionally, the General Plan proposes a fire station location in West Antioch in the general vicinity of Tenth Street and Somersville Road. Although not currently needed, this station would be constructed in the future pending significant residential and industrial development in West Antioch.

The specific location of new fire stations must consider both travel distance and travel time to the areas to be served. Although national standards are currently being reviewed and reevaluated, the travel or response time should not be greater than four minutes from the time the call is received until fire engines can reach destination. This means that physical barriers, traffic conditions and other obstructions must be considered as well as actual distance in the location of future fire stations.

Future fire protection in the Antioch area will be significantly strengthened by the consolidation of services. The General Plan supports the decision which will best safeguard the welfare of Antioch residents.

Police protection is provided to the residents of Antioch by the City's Police Department. Although the existing station, located at 301 West 10th Street,

is relatively new, additional storage and office space would be highly desirable at the present facility. Additionally, new improvements may be required to the police training facilities which are currently located along the San Joaquin River in the vicinity of Fulton Shipyard Road. As the City population continues to grow, new manpower requirements and training facilities will also be required.

The Delta Memorial Hospital site should continue as a hospital location. Periodic studies should be conducted by the hospital and appropriate community and health planning agencies to assist the hospital in providing the necessary health care services to meet the needs which come with the population growth of the area.

4. Public Utilities

The water distribution system currently in operation in the City of Antioch will be sufficient to meet the quantity demands of projected residential, commercial, industrial and institutional use. However, the City should make demonstrable efforts to ameliorate and maintain water quality in the San Joaquin River by participating in future regional and State programs and by launching a local improvement campaign.

By protecting the hillside watersheds through the adoption and implementation of the Environmental Resource Management Element, the General Plan safeguards the Antioch storm drainage system. The General Plan delineates a "line of urbanization" as a boundary to development ascending the steeper hillsides of 30 percent slope or greater, thereby avoiding paved surfaces in the steeper runoff areas and the threat of additional flood waters will be minimized.

The present wastewater facilities are questionable due to the present discharge standards and requirements of the Bay Area Pollution Control Board; therefore, no additional tentative tract maps are being accepted by the City. A study is currently underway to determine whether the existing facility should be enlarged and

improved with Federal funds, or if Antioch should participate in the East County Regional Sewage Treatment Facility. The General Plan recommends that a decision be made as soon as possible so that the policies recommended in the Housing Element and the Land Use Element which are ultimately dependent on wastewater treatment can be implemented.

The existing sanitary landfill site in Antioch has reached capacity, and the City has had to use adjacent facilities owned by Pittsburg. Although a number of possible sanitary landfill sites have been studied by the City of Antioch, no particular site has been selected and the problem of an adequate solid waste disposal facility for the Antioch area remains unresolved.

Gas, electric and telephone service available in Antioch should be adequate for projected population demand. In light of the national energy crisis, the General Plan recommends conservation of resources in whatever manner possible at the individual and the municipal levels. The General Plan also recommends the undergrounding of utility lines as described in the Community Design Element.

5. City Maintenance Service Center

Antioch's corporation yard and maintenance facilities are located on a 1.6 acre site between O and M Streets, south of 4th Street. Some additional land has been purchased by the City and is available for immediate expansion.

Facilities at the site include a garage, locker rooms, sign and carpenter shop, meter service shop, an administrative office and a new 350 square foot warehouse. Additionally, an older warehouse of equal size provides storage for the City's recreation equipment. The afore-mentioned warehouse for public works storage is really the City's central warehouse. All types of stationery supplies are kept in this facility. A great deal of the mobile equipment is based at this center. Very few vehicles have covered parking. It

would be advantageous to pave the expanded site to provide for easy movement of vehicles and storage of equipment. It would also minimize dust and other inconveniences of the dry or wet seasons that occur. Some of the specialty equipment can continue to be parked in the open. Such items as street sweepers and large construction vehicles do not need to be stored inside. Expansion and improvement of the municipal garage can be anticipated.

As the City is in the utility business, a good deal of piping and other related materials must be kept by the City. It is not appropriate to store this type of equipment or material inside a structure. As the City's demands continue to increase, additional space will be required for the storage of such equipment. The continued growth of Antioch will necessitate expansion of the Service Center for additional storage of equipment and materials.

The site does not provide adequate employee parking. Additional land should be acquired and paved for employee parking.

As the community expands, the site should be more centrally located and service consolidated to effect a greater cost savings, etc.

6. Airport

An assessment by the County's Airport Land Use Commission indicates that the existing Antioch Airport will not be adequate to meet projected demands. Although there is presently no suitable alternate site for an airport within the immediate vicinity of Antioch, a joint study should be undertaken by the appropriate airport authorities (i.e., Federal Aviation Administration, County Airport Land Use Commission and Association of Bay Area Governments) to determine several options for an appropriate airport facility in eastern Contra Costa County.

7. Fairgrounds

The facilities at the Contra Costa Fairgrounds should be adequate to support the needs of the projected population of Antioch. However, the relationship between the fairgrounds and adjacent land uses is highly unsatisfactory. There is no buffer to separate residential areas from the noise of car races or the view of parking lots.

The General Plan recommends that a landscaped wall be installed at the periphery of the fairgrounds to separate the enthusiastic crowds from the neighboring homeowners. The wall and the plantings should be designed for maximum audio and visual separation.

8. Library

The Antioch Library is a new facility, adequate to meet the needs of the projected population. The local facility is a part of the Contra Costa County Library System which can absorb the demands of additional borrowers.

9. Educational Facilities

Although State averages for public school enrollment are dropping, the elementary school age population in Antioch shows very little decline. Thus, while other California cities are limiting new school construction, the General Plan recognizes a need for additional educational facilities in Antioch. The great proportion of school children in the Antioch population is directly related to the type of housing available locally. This relationship is described in detail in the Housing Element.

The Antioch planning area is served principally by one school district, the Antioch Unified School District. Eight elementary schools (grades K-6), two junior high schools (grades 7-9) and one senior high school (grades 10-12) are now operating within the jurisdiction of

the Antioch Unified School District. Approximately one-fifth of the planning area to the southeast is within the jurisdiction of the Brentwood Union Elementary School District and the Liberty Union High School District. Both of these districts, however, do not have existing plant facilities within the Antioch planning area.

The General Plan recommends an additional nine elementary schools to serve the proposed residential neighborhoods in Antioch. According to national recommended minimum school standards, 10 acres of land are adequate to house an elementary school of up to 850 pupils. The average size of elementary school sites within the planning area is about 12.7 acres. Antioch unified standards indicate that school children should reside within 1/2 to 3/4 of a mile walking distance of the elementary school they attend and should not be required to cross a heavily traveled street in order to reach their destination. The proposed elementary schools are based on these standards and coordinated with the five existing sites on which the Antioch Unified District has development options. In addition, elementary school sites were located in conjunction with neighborhood parks and the townwide open space system. This facilitates pedestrian and bicycle access to the schools with a minimized encounter of heavily traveled streets.

The General Plan recommends an additional junior high school for Antioch to be located in Gentrytown. This would supplement the services of the two existing facilities, Park Junior High and Antioch Junior High. The recommended site size for a junior high school is 25 acres. This would provide building, playground and auxiliary space for 1,000-1,200 pupils. The students should have to walk no more than one and one-half miles to reach their school. Again, the proposed site has been coordinated with an Antioch trail system to facilitate pedestrian and bicycle access.

The General Plan endorses the construction of a second high school. The new facility will be located in southeast Antioch on a 40-acre site that meets national space standards. Ideally, all students would be within a two mile walking radius of high school. However, there are several areas within the City of Antioch where this desirable condition will be unattainable.

Los Medanos Community College, located on a 110-acre site along the western boundary of the planning area south of Leland Road, between Loveridge Road and Standard Oil Road, is a public two-year facility offering an Associate of Arts degree. A brand new facility, the college will accommodate some 3,500 students within an enclosed mall complex. Existing circulation to the site is unsatisfactory because the only access to Los Medanos for Antioch residents is via Highway 4, Delta Fair Drive and Buchanan Road. The Circulation Element proposes a northerly extension of Paso Corto Road to provide more convenient routes to the community college for Antioch students. The Community Facilities Element joins forces with the Circulation Element in recommending this arterial extension and grade separation interchange at State Freeway 4.

I. COMMUNITY DESIGN ELEMENT

1. The City of Antioch, in cooperation with the Downtown Merchants Association, should undertake or cause to be prepared a definitive urban design study for the downtown area and central business district of Antioch. The outcome of this analysis would be a comprehensive plan that provides the basis for appropriate land use development decisions in the downtown area. There are several goals in this General Plan document which address themselves to the revitalization of the downtown area and central business district as a village center. The effectuation of this idea requires specific guidelines to define, preserve and create the elements necessary for an attractive and prosperous downtown Antioch.
2. A comprehensive community design manual should be prepared in order to effectively communicate design standards to all those who are intimately involved with development in Antioch - contractors, subdividers, municipal employees, utility personnel, nurserymen and resident "do-it-yourselfers." This manual would provide a coordinated design vocabulary for neighborhoods, buildings, streets, parks and open spaces in Antioch. It would include recommendations for paving, lighting, sign graphics, types of trees, street and park furniture, architectural massing, exterior finishes and the like, all contributing to an orderly yet visually stimulating image for Antioch.

3. The Diablo foothills are a prime component of Antioch's image so views of them and from them must be protected and enhanced. High-rise construction that interferes with a satisfying vista should be prohibited; ascending development that cuts into the precious scrub-covered slopes should not be allowed. This recommendation also requires careful treatment of the linear view seen down corridors like Lone Tree Way and Paso Corto Road, and the horizontal views of the foothills seen as backdrops across town.
4. The San Joaquin River, as the other major natural component of Antioch's configuration, should be made far more visible and accessible than it is now. The riverfront should provide a route for pedestrians and cyclists as well as opportunities for active and passive recreation. If the riverfront was more intensively used for picnics, fishing, boating or just sitting, its importance would be amplified. In addition, the river should be made visible from appropriate vantage points in downtown Antioch, a tie currently severed by massive industrial warehouses.

Affirmative treatment of the San Joaquin River will infinitely clarify Antioch's image.

5. Greater restrictions should be placed on a developer's rights concerning soil because the quality of the earth is critical to community design in Antioch. First, preliminary grading plans should be required with all tentative subdivision plans in order for a development to be eligible for approval. In this manner, changes in the configuration of the land will be known well in advance of actual construction and any conflict with a desirable image can be rectified.

Then, the subdivider should be prohibited from extensive removal of topsoil. When good topsoil is scraped from the site, it is difficult if not impossible to grow trees and shrubs. The lack of vegetation seriously interferes with the quest for an attractive Antioch.

6. The streams that drain Antioch watersheds should be circumscribed by suitable landscape buffer zones in rural and urban areas alike. Of particular concern

are two drainage canals, one at Highway 4 and Contra Loma Boulevard and the other running from Lake Alhambra through the southwest corner of the junction of Cavallo Road and Wilbur Avenue and continuing under Wilbur Avenue toward Fulton Shipyard. These two areas should be rejuvenated as natural drainage courses.

7. The City of Antioch should reflect the goals and objectives of the General Plan by continuing efficient use of Environment Impact Reports, examining them especially for potential adverse effects on the image and design of Antioch.
8. The City of Antioch reevaluate its building codes and inspection standards in light of the burgeoning interest in community design. Since construction issues and site planning are the tools that actually craft man-made environments, the responsibilities of builders should be updated in terms of the visual image of the City.
9. The entryways to Antioch should be clearly identified in order to better establish a sense of arrival and sense of place. This entails more than just a sign; it involves a design study that would create an entry sequence by means of landscaping, paving, lighting and vistas. Driving along State Highway 4, the through motorist should know without a doubt, when he has reached Antioch. Similarly, the local driver should receive distinct visual clues to the City limits as he rides along Wilbur Avenue, Lone Tree Way, Buchanan Road and Hillcrest.
10. Commercial signs should be regulated as to size, height, projection, placement and materials. Limitations should be placed on garish advertising typified by the flashing signs of automotive commerce. This effort will considerably contribute to the revitalization of downtown Antioch, as well as to the strip development along Tenth Street between Somersville Road and O Street and along A Street.
11. A street tree program should be instituted in Antioch and the use of native California trees should be encouraged. By designating different trees for different districts, the identity of a neighborhood becomes more apparent.

12. Development plans should be initiated for land designated for parks and recreation. A key function of parkland is the visual relief afforded by the verdant open space. Parkland that is sterile actually detracts from the City's image by creating the vacant lot effect.
13. Utility wires should be installed underground wherever possible. Remedial treatment of existing overhead lines is particularly important on A Street, G Street, the downtown business district and Ridgerock Park.
14. Paso Corto Road and Hillcrest Road should be treated as parkways. They should be afforded appropriate landscape treatment, which might include views to adjacent agricultural land or the planting of native trees. The recommendation for parkways is treated in greater detail in the Scenic Highway Element contained in the Environmental Resource Management Element of this General Plan document.

III

**FRAMEWORK
FOR PLANNING**

REGIONAL SETTING

The City of Antioch, California, located in Contra Costa County is the eastern-most of several fast growing communities extending from the San Francisco-Oakland metropolitan area along California Highways 4 and 160. The City lies about 20-25 miles east of the residential communities of Concord and Walnut Creek. The City of Pittsburg is Antioch's immediate neighbor to the west. Refer to Figure III-1 for the relative geographical position of Antioch to these major communities and the overall highway system serving the region.

PLANNING AREA BOUNDARIES

The Antioch Planning Area is located in the Pittsburg-Antioch plain, a low-lying area north of the Mount Diablo Range extending a mile or two to Suisun Bay and the San Joaquin River, as shown on Figure III-2. The plain is enclosed on the north by the San Joaquin and Sacramento Rivers and on the south by the Mount Diablo Foothills which mark the limits of the Delta region. This region has an average of 12.5 inches of rain a year, with a long, warm summer season and a foggy, cool winter.

West and East Antioch Creeks drain a combined watershed of approximately 15,000 acres and flow into the San Joaquin River. These creeks and various tributaries drain the northern portion of the Planning Area and lend variety to the plain's natural landscape. Ridges of the Mount Diablo foothills divide the lower portions of the Planning Area into major areas, generally referred to as Lone Tree Valley and Deer Valley. The Contra Costa Canal weaves through the plain forming another significant landscape feature. The underground Mokelumne Aquaduct also traverses the valley, carrying water into the Oakland metropolitan area.

This area is referred throughout the text of the general plan as the Planning Area. It is generally bounded by the San Joaquin River on the north, the City of Pittsburg and the hillsides of the Mount Diablo range on the west, the crest of the southern mountain range along Deer Valley on the south, and an imaginary line running north over the foothills parallel with and adjacent to Empire Avenue on the east. The General Plan Planning Area roughly covers approximately 51.2 square miles or 32,781.4 acres. In the past this area has generally been referred to as an "adopted area of interest" for the City of Antioch.

The following text and Figures III-3 and III-4 summarize the various other geographical units and boundaries used within the General Plan.

1. LAFCO Sphere of Influence

The land within this boundary is proposed by the Contra Costa County Local Agency Formation Commission as an area subject to the influence of potential urbanization in the future. Section 54774 of the Government Code more specifically defines it as "a plan for the probable ultimate physical boundaries and service areas of a local government agency." (Refer to Figure III-3)

2. Line of Urbanization

The line of urbanization is generally referred to as the farthest expansion of development at any given point in time in the Antioch area based on the recommended community development policies, density standards as proposed by the General Plan, and existing service area capacity. (Refer to Figure III-3)



REGIONAL LOCATION MAP

FIGURE III - 1





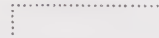
SAN JOAQUIN RIVER

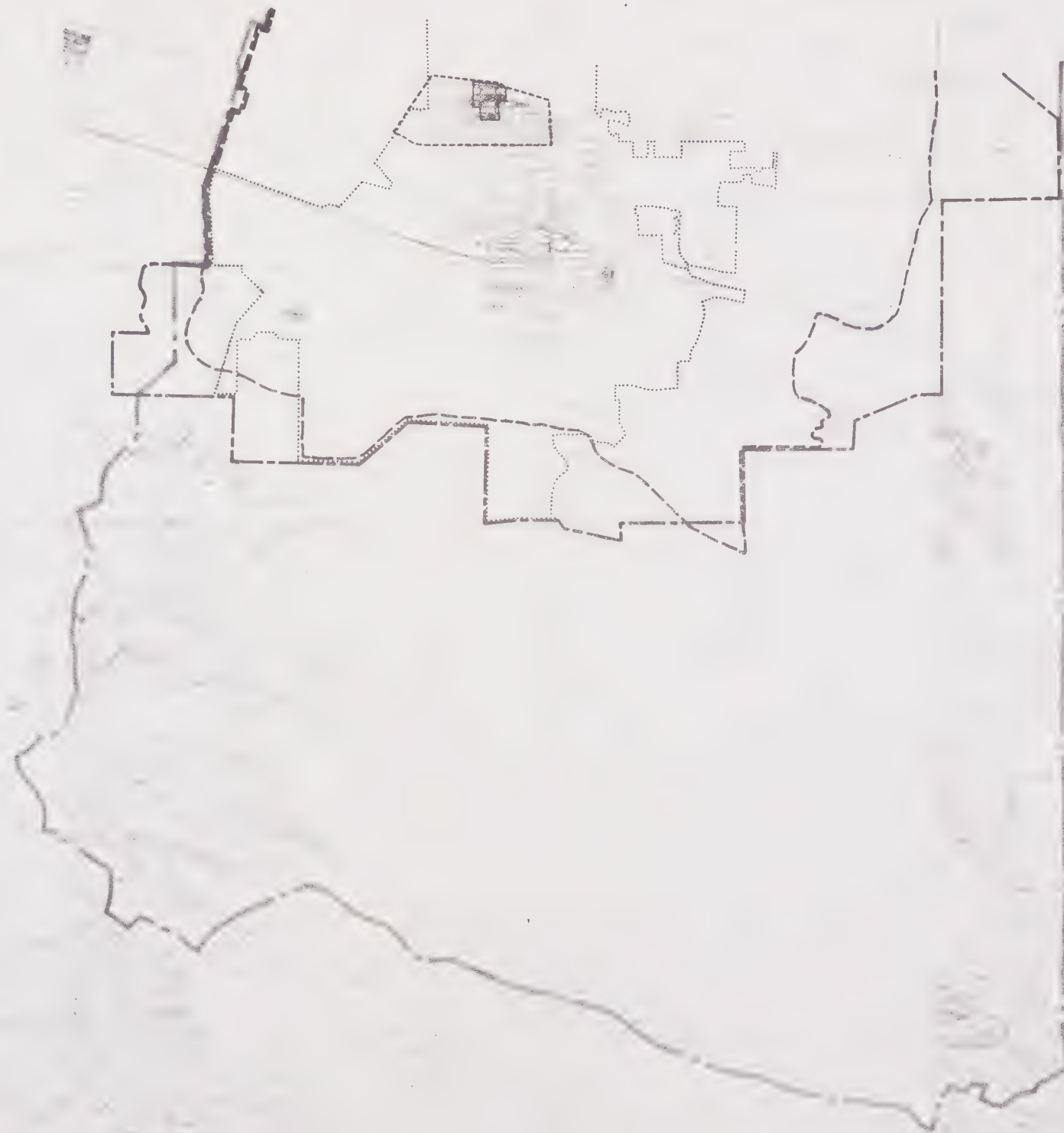
GENERAL PLANNING AREA

FIGURE III - 2



LEGEND

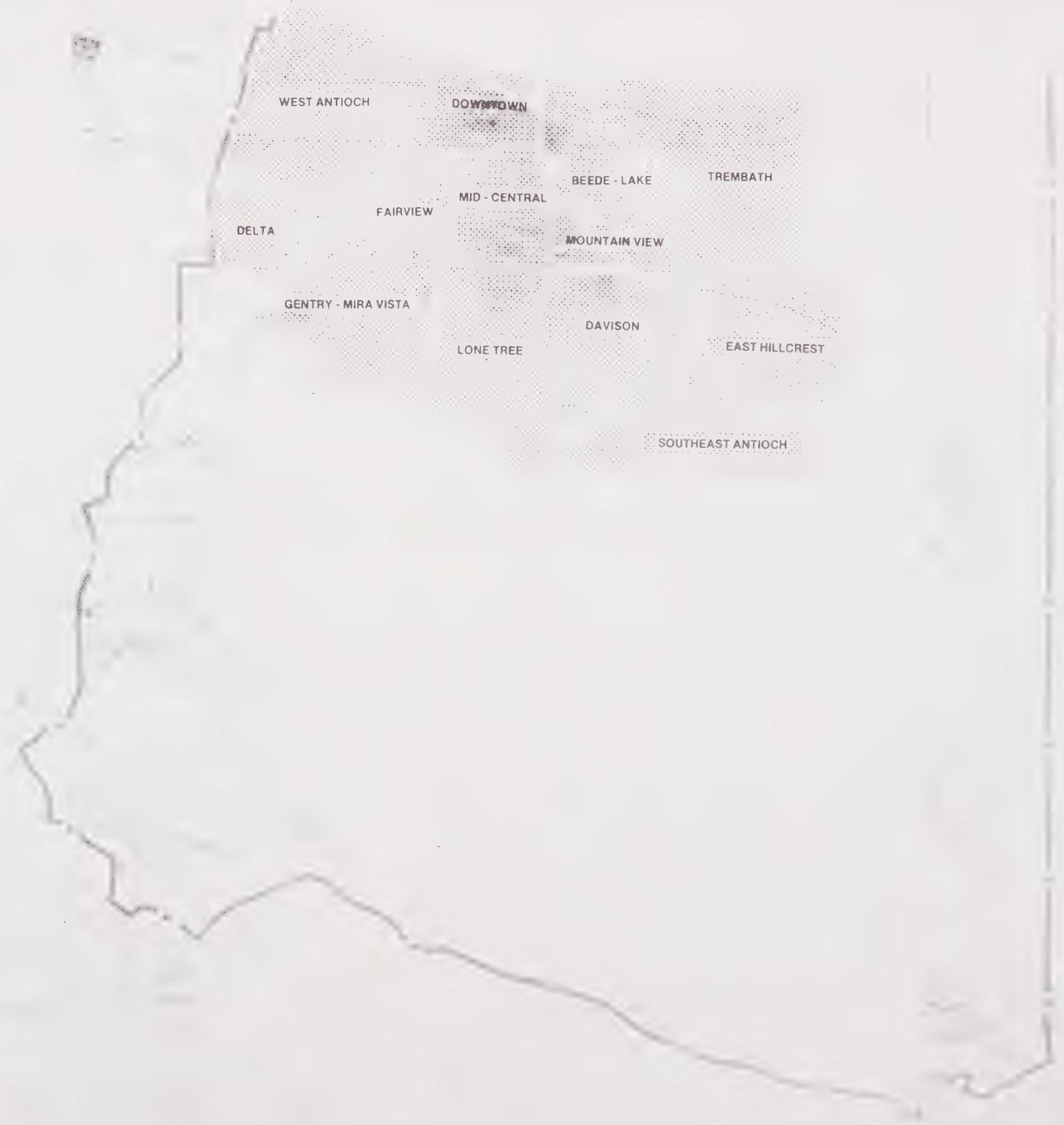
-  PLANNING AREA BOUNDARY
-  PROPOSED LAFCO SPHERE OF INFLUENCE
-  LINE OF URBANIZATION
-  DOWNTOWN AREA
-  CENTRAL BUSINESS DISTRICT
-  CITY LIMITS



PLANNING BOUNDARIES

FIGURE III - 3





NEIGHBORHOOD SERVICE AREAS

FIGURE III - 4



3. Existing City Limits

The area within this boundary is the official incorporated territory of the City of Antioch. (Refer to Figure III-3)

4. Downtown Area

This area is generally bound by San Joaquin River on the north, A Street on the east, 10th Street on the south, and Somersville Road on the west. (Refer to Figure III-3)

5. Central Business District

This area is located within the "Downtown Area" and bound on the north by the San Joaquin River, on the east by E and F Streets, on the south by 3rd, 4th and 6th Streets and on the west by H and I Streets. (Refer to Figure III-3)

6. Neighborhood Service Area

Within the existing urbanized area of Antioch roughly corresponding to the existing corporate boundaries, areas were established based on predominant physical separations, statistical district comparisons, and integrated or homogeneous characteristics. These areas represent reasonably integral neighborhood units which allowed more detailed examination of their thirteen separate characteristics. (Refer to Figure III-4)

PATTERNS OF URBANIZATION

The Pittsburg-Antioch plain contains the larger part of the urbanized area of Eastern Contra Costa County and is one of the major suburban concentrations of population of Contra Costa County. Major sources of population in this area are shared by Pittsburg (25,300) and Antioch (32,500).

Urban development has historically followed an east-west axis along the San Joaquin River and rail lines linking Antioch and Pittsburg to the Greater San Francisco-Oakland metropolitan area. Today, State Freeway 4 provides access to the urbanized portion of Central Contra Costa County from the communities of Pittsburg and Antioch.

Historically, Antioch's early economic life centered around mining and shipping. The City soon became a major transshipment point for the coal taken from the slopes and foothills of Mount Diablo. Around the turn of the century, as the production in the mines gradually slowed to a halt, the community turned to agriculture and canning as its mainstays. Many of the nation's largest industrial corporations have located along the San Joaquin River, including ship building, paper products, glass containers, gypsum, chemical and power plants.

The overall development pattern of Antioch has been dictated by the geographical features, i.e. (San Joaquin River and the foothills of Mount Diablo Range) sites of early settlement and transportation routes. Commercial and industrial development is principally confined to level lands along major circulation routes. Major industrial development has taken a water orientation and is concentrated along the San Joaquin River in the form of manufacturing plants. Early residential development in Antioch occurred along the banks of the San Joaquin River in a grid-iron street network, comprising what is primarily today the central area of downtown Antioch.

In Antioch, residential development early centered around the downtown area, pushing outward in the post World War II wave of suburbanization. Limited to the north by the San Joaquin River, the major expansion has been into the flatlands and rolling terrain south of State Freeway 4.

The main thrust of Antioch's population growth has come in the years following World War II as its population more than tripled from less than 10,000 in 1945 to more than 32,000 in 1973. Although population growth in the Antioch area has been primarily accommodated on flatlands in the past, the major development thrust has occurred more recently to the south toward the foothills of the Mount Diablo Range.

In the past three years, the cities population has grown from 28,060 in 1970 to 32,500 in 1973. Furthermore, according to a special census in 1972, Antioch was the fastest growing city in Contra Costa County between April 1, 1970 (28,060) and February 1, 1972 (31,150). This trend appears to be rapidly continuing as the citys population is currently approaching 33,000.

Commercial development is heavily concentrated along A Street and on Eighteenth Street east of A Street, on Tenth Street between Somersville Road and L Street, and in the central core of downtown Antioch. In recent years, a regional shopping center has been built near the intersection of State Freeway 4 and Somersville Road as a direct response to an increase regional market pressures in the Antioch area.

Undeveloped land suitable for urban, primarily residential, expansion is scattered throughout the community; however, the supply of large level sites is in short supply. The bulk of open land is to the south in the surrounding foothills. Creekbeds, flood control channels and a number of utility and transportation easements provide the possibility of permanent open space system throughout the community.

ECONOMIC AND SOCIAL CHARACTERISTICS

The following economic and social indicators are provided as a summary of background information on Antioch and the City's comparative role with the surrounding area.

1. Population

The population growth rate for Antioch recently has been greater than that for other cities in Contra Costa County as indicated in Table III-1 or the Bay Area or the County of Contra Costa as indicated in Table II. This is due in large part to the desirable climatic conditions of Antioch, and its recently increased accessibility from State Freeway 4. Additionally Antioch has encouraged growth over the past decade which has resulted in the availability of reasonable priced housing for its residents. Although the population of Antioch during the past three years has been growing at an annual rate of nearly 6.0 percent, it is now anticipated to gradually decline to 1.5 percent per year through the year 2000 based on the recommended policies and densities of the General Plan. Population projections and percentages of change are contained in Table III-2.

TABLE III-1

POPULATION GROWTH, 1970-1972
CITIES IN CONTRA COSTA COUNTY

<u>CITY</u>	<u>APRIL 1, 1970</u>	<u>FEBRUARY 1, 1972</u>	<u>TWO YEAR RATE OF INCREASE</u>
Antioch	28,060	31,150	12
Brentwood	2,649	2,890	10
Concord	85,164	93,700	11
El Cerrito	25,100	25,120	-2
Lafayette	20,484	20,700	1
Martinez	16,506	17,400	6
Pinole	13,266	13,950	6
Pittsburg	20,651	21,650	5
Pleasant Hill	24,610	26,350	8
Richmond	79,043	80,800	2
San Pablo	21,461	21,800	2
Walnut Creek	39,844	43,350	10
Other Incorporated	<u>1,637</u>	<u>1,660</u>	1
Subtotal, Incorporated	378,565	400,600	6
Unincorporated	<u>177,240</u>	<u>186,500</u>	6
County	555,805	587,100	

Source: Contra Costa County Planning Department and Contra Costa County Development Association, 1973

TABLE III-2

POPULATION GROWTH COMPARISONS
1940 to 2000

	<u>Antioch</u>	<u>Average % Increase</u>	<u>Contra Costa County</u>	<u>Average % Change</u>	<u>San Francisco Bay Area</u>	<u>Average % Change</u>	<u>State of California</u>	<u>Average % Change</u>
1940	5,100		100,500		1,734,300		6,907,400	
1950	11,100	5.4	299,000	6.6	2,681,300	6.8	10,586,200	3.4
1960	17,300	3.5	409,000	2.6	3,638,900	2.6	15,717,200	3.2
1970	28,100	3.8	555,800	2.6	4,630,200	2.1	19,968,000	2.1
1980	42,200	3.3	714,400	2.2	5,667,300	1.8	24,425,000	1.8
1990	56,700	2.5	871,500	1.9	6,687,400	1.5	28,825,000	1.5
2000	60,000	.5	1,011,000	2.3	7,623,600	1.2	32,860,00	1.2

SOURCE; U. S. Census, 1940, 1950, 1960, 1970
 Association of Bay Area Government Regional Plan 1970-1990
 Lampman and Associates, 1974

2. Place of Employment

The strong orientation of Antioch to the region and its dependence on Contra Costa County is revealed through studying the place of work of Antioch residents. According to the 1970 census of population, over 90 percent of the residents of Antioch worked within Contra Costa County.

Employed residents of Antioch work locally in about one case in four according to data for new residents. About 45 percent work in the Pittsburg-Antioch area. Another 34 to 35 percent work in the Concord-Pleasant Hill area and the distance zone which includes Martinez on the north and Walnut Creek on the south. Very few residents of Antioch work in the more distant parts of the County or outside the County (Refer to Table III-3).

It is evident that the population of Antioch is currently "commuter oriented". With the recent surge of residential development in the past decade, Antioch is certainly now more a bedroom suburban community than it was in 1960. However, as Antioch's rate of growth and population stabilizes, and the Central Contra Costa County area begins to mature, it is anticipated that some shift will occur in commuting patterns due to the establishment of employment opportunities in the immediate vicinity of Antioch. Undoubtedly if the Bay Area Rapid Transit system is extended to the Pittsburg-Antioch corridor commuting patterns both into and out of Antioch will be significantly affected. Although it is too early to predict the long range impact of the current energy crisis, it is probable that it, too, will have an impact on community patterns in the San Francisco-Oakland metropolitan area and thus on Antioch.

TABLE III-3

NEW RESIDENTS IN ANTIOCH
BY PLACE OF EMPLOYMENT
TO AUGUST, 1970

<u>ZONE</u>	<u>DISTANCE</u>	<u>AREA OR PLACE</u>	<u>NUMBER</u>	<u>PERCENT</u>
	Local	City of Antioch	152	25.17
1	0 - 5 miles	Antioch-Pittsburg	271	44.87
2	6 - 10 miles	Brentwood-West Pittsburg	11	1.82
3	11 - 15 miles	Concord-Pleasant Hill	123	20.36
4	16 - 20 miles	Walnut Creek-Martinez	84	13.91
5	21 - 25 miles	Danville-Orinda	8	1.32
6	26 - 30 miles	Livermore-Vallejo	8	1.32
7	31 - 35 miles	Richmond-Oakland	62	10.27
8	36 - 40 miles	San Francisco-San Jose	26	4.30
9	41 - 200 miles	Fort Ord-Fresno	3	.50
10	201 - 400 miles	Los Angeles-San Diego	7	1.16
	Out of State		<u>1</u>	<u>.17</u>
TOTAL			604	100.00
In Contra Costa County			508	84.11
Outside Contra Costa County			<u>96</u>	<u>15.89</u>
TOTAL			604	100.00

Source: Data filed with Antioch Community Development Department on August 20, 1970.
More recent data not comparable.

3. Income

According to the 1970 census the median annual family income for families in Antioch was \$10,972. This was less than that earned by families in other cities of Contra Costa County, except for Richmond, Pittsburg and San Pablo. The highest family income was found in Lafayette at \$17,635. The next highest was in Walnut Creek at \$14,647 and the third highest was El Cerrito at \$13,358. As can be seen from Table III-4 the annual family income for Antioch in 1970 was below the average of other cities in Contra Costa County, but about \$2,000 above the lowest figure of \$9,057 for the City of San Pablo. Per capita incomes follow a similar pattern to family income in that minor differences are noted due to fluctuation in the average size and age of the family.

TABLE III-4
ANNUAL FAMILY INCOME AND PER CAPITA INCOME
FOR SELECTED CONTRA COSTA COUNTY CITIES
1970

CITY	FAMILY INCOME		PER CAPITA INCOME	RATIO TO AVERAGE
	MEDIAN	MEAN		
Antioch	\$10,972	\$11,679	\$3,344	84
Concord	12,614	12,960	3,454	87
El Cerrito	13,358	15,249	5,017	126
Lafayette	17,635	19,823	5,768	145
Martinez	12,014	12,484	3,670	92
Pinole	13,113	13,895	3,767	95
Pittsburg	9,224	9,633	2,702	68
Pleasant Hill	13,203	13,842	3,747	94
Richmond	10,363	11,027	3,183	80
San Pablo	9,057	9,471	3,102	78
Walnut Creek	14,647	15,936	5,040	127
Contra Costa County	12,423	13,778	3,971	97

Source: 1970 U. S. Census of Population

4. Retail Sales

The City of Antioch, in 1970, had higher per capita retail sales than was experienced in Contra Costa County. However, taxable sales by other than retail establishments were substantially higher in the County than in the City, so that the overall comparison is unfavorable to the City. Per capita taxable sales in the City averaged \$1,514 in comparison with \$1,681 in the County. It should be noted that even retail sales within the City would have been below average if it were not for the unusually high sales by automobile dealers in Antioch. (Refer to Table III-5)

Per capita taxable expenditures varied widely among cities of Contra Costa County in 1970. Walnut Creek was high with an average of \$2,920. Brentwood, Concord, El Cerrito, and Pleasant Hill each had average sales in excess of \$2,000 per capita. (Refer to Table III-6)

It is anticipated that Antioch will continue to strengthen its retail position with the recent completion of the County East Regional Shopping Center.

TABLE III-5
EXPENDITURES SUBJECT TO SALES TAX
CONTRA COSTA COUNTY AND CITY OF ANTIOCH
1970

	Expenditures in 1000's		Per Capita	
	Contra Costa County	City of Antioch	Contra Costa County	City of Antioch
Population	558,100	28,500		
Apparel	\$ 50,722	\$ 2,346	\$ 90.88	\$ 82.32
General Merchandise	175,120	9,448	313.78	331.51
Drug Stores	34,066	1,230	61.04	43.16
Food Stores	81,839	4,620	146.64	162.11
Liquor Stores	25,585	1,182	45.84	41.47
Eating and Drinking	64,748	3,799	116.02	133.30
Home Furnishings	33,496	1,238	60.02	43.44
Buidling Materials	40,505	1,137	72.58	39.89
Auto Dealers	142,129	11,794	254.67	413.82
Service Stations	34,625	681	62.04	23.89
Other Retail Sales	<u>39,777</u>	<u>2,089</u>	<u>71.27</u>	<u>73.30</u>
Subtotal	722,612	39,564	1,294.77	1,388.21
All Other	<u>215,518</u>	<u>3,580</u>	<u>386.16</u>	<u>125.61</u>
TOTAL	<u>\$938,130</u>	<u>\$43,144</u>	<u>\$1,680.93</u>	<u>\$1,513.82</u>

Source: California State Board of Equalization, 1973

Note: Population based on July 1 estimates of California State Department of Finance.

TABLE III-6

TAXABLE SALES IN SELECTED CITIES
OF CONTRA COSTA COUNTY
1970

<u>City</u>	<u>Population</u>	(1000's) <u>Taxable Sales</u>	<u>Sales Per Capita</u>	<u>Actual Per Capita Expenditure in Comparison to Expenditure Based on Income</u>
Antioch	28,060	\$ 43,144	\$1,538	108
Brentwood	2,649	5,733	2,164	--
Clayton	1,385	744	537	--
Concord	85,423	190,726	2,233	152
El Cerrito	25,190	54,057	2,146	101
Hercules	252	184	730	--
Lafayette	20,484	26,243	1,281	52
Martinez	16,506	15,198	921	59
Pinole	13,266	10,212	770	48
Pittsburg	20,651	22,524	1,091	95
Pleasant Hill	24,610	54,083	2,198	139
Richmond	79,043	146,195	1,850	137
San Pablo	21,461	38,916	1,813	138
Walnut Creek	<u>39,844</u>	<u>116,331</u>	2,920	136
Subtotal	378,824	724,290	1,912	--
Other Areas	176,981	213,840	1,208	--
Contra Costa County	555,805	\$938,130	\$1,688	100

Source: California State Department of Finance, 1972

5. Housing Trends

A comparison of building permits issued in the City and County between 1960 and 1970 for single family dwellings revealed that such permits have declined in numbers at the County level but have increased in numbers in the City of Antioch. During the first five years of the decade, an average of 4,080 single family building permits were issued yearly in the County, whereas during the last five years the average was only 3,331. By contrast, in the City, an average of 196 single family building permits were issued in the first five years and then advanced to an average of 322 permits in the remaining five years. However,

the value of housing in Antioch has consistently been lower than that for housing in Contra Costa County as a whole (Refer to Table III-7).

TABLE III-7

ANNUAL COMPARISON OF STRUCTURAL VALUES
FOR SINGLE FAMILY DWELLING UNITS IN
CONTRA COSTA COUNTY AND CITY OF ANTIOCH
1960 to 1970

	CONTRA COSTA COUNTY		CITY OF ANTIOCH		% OF CITY OF ANTIOCH TO COUNTY	
	Number	Average Value	Number	Average Value	Number	Values
1960	3,718	\$14,073	174	\$12,963	4.68	92.25
1961	2,863	19,709	131	12,430	4.42	63.07
1962	4,179	15,532	144	12,889	3.45	82.98
1963	4,527	16,527	184	13,144	4.06	79.53
1964	4,757	17,515	252	13,827	5.30	78.94
1965	4,447	18,297	292	15,687	6.57	85.74
1966	3,152	19,785	247	15,471	7.84	78.20
1967	3,165	20,961	310	15,772	9.79	75.24
1968	4,166	22,166	501	15,851	12.03	71.51
1969	7,881	23,066	354	16,412	12.29	71.15
1970	<u>2,177</u>	22,421	<u>230</u>	16,850	10.56	75.15
TOTAL	40,032	--	2,819	--	7.04	--

Note: Based on building permit value, not directly comparable to 1970 Census data.

Source: Contra Costa County Development Association, 1973

Many of the homes built during and immediately after World War II in the downtown area are now at an age where they demand a high amount of maintenance and repairs; their occupants are increasingly becoming young families who cannot afford new housing or older persons with grown families who are now living on a fixed income and cannot afford the repairs. These conditions are likely to lead to areas of deteriorated structures if proper actions are not taken to encourage a high level of maintenance.

Similarly trends toward deterioration of older multiple units should be combated to avoid diminishing of the quality of housing in the city.

Another type of housing which is satisfying new demands in Antioch is the clustering of detached or semi-attached homes on lots of smaller size and amalgamating the remainder of the lot into large common open spaces. This type of housing is creating a diversified housing market which up to recently was noticeably lacking.

The preponderance of single family dwelling units in the past has narrowed the possibility of choice in housing type and location. With a greater mixture of housing types becoming available, people may have the opportunity to change homes throughout their life cycle, as their needs change yet remain in the same community if they so desire.

IV
GOALS

The General Plan is a comprehensive and coordinated guide for future growth and development of the community, including both private and public activity. Implicit in this statement is the necessity for general public agreement on the kind of community the citizens of Antioch wish to achieve. Although mutual agreement on community goals is difficult to achieve, it is an extremely important phase in the planning process in order to develop a comprehensive and coordinated General Plan.

As an initial step in the planning process, the Antioch General Plan Goals Committee was appointed by the City Council to formulate a set of community goals for the General Plan. The goals developed by the committee were to represent the desires and aspirations of a majority of the people of Antioch and yet be physically, economically and politically achievable.

The goals of the General Plan are stated here in order that each citizen may decide for himself how well the Goals Committee has realized the opportunities and potentialities of the community and interpreted the aspirations of the people. The General Plan goals are as follows:

A. OPEN SPACE, CONSERVATION AND RECREATION

It is the goal of the City of Antioch to conserve and enhance the unique natural beauty and irreplaceable natural resources of the community; to insure the protection and enhancement of the river and creeks, their adjoining natural beaches and shorelines, the aquatic and wildlife habitats and the natural topography, hillsides and watershed areas within the community; and to insure the protection and control of urban development within areas of cultural or historical value and natural physical hazards.

B. SEISMIC SAFETY

It is the goal of the City of Antioch to permit development in only those areas which are relatively safe from unexpected seismic activity and hazardous geological conditions.

C. SAFETY

It is the goal of the City of Antioch to provide to its citizens an environment that is reasonably safe from unrecognized hazards and unexpected disasters.

D. LAND USE

It is the goal of the City of Antioch to provide for an orderly balance of both public and private land uses within convenient and compatible locations throughout the community and to insure that all such uses--their type, amount, design and arrangement--serve to protect and enhance the character and image of the community as a desirable river-foothill oriented urban area.

E. HOUSING

It is the goal of the City of Antioch to preserve and enhance the community's residential environment by maintaining and improving the visual character and physical quality of both housing and supportive community facilities, and by encouraging the development of a variety of housing types to adequately serve the needs of present and future residents of the community.

F. CIRCULATION

It is the goal of the City of Antioch to insure the orderly development of those facilities which promote the safe, resource conserving, attractive, convenient and economical movement of people and goods within the Antioch area; to insure the development of all such facilities in a manner which will minimize any detrimental effects upon the environmental quality of the City; to provide for public safety; and to assist in the development of a total circulation system to serve the present and future needs of the City, Contra Costa County and the greater San Francisco Bay Area.

G. NOISE

It is the goal of the City of Antioch to prevent any increase in noise levels over acceptable levels in all areas of Antioch insuring appropriate noise standards through effective planning and land use regulations.

H. COMMUNITY FACILITIES

It is the goal of the City of Antioch to insure a full and adequate range of public and private community facilities, and to provide a consistently high level of public services so as to insure each resident the opportunity to enjoy a safe, healthful and attractive living environment.

I. COMMUNITY DESIGN

It is the goal of the City of Antioch to preserve and enhance the visual character and image of the community, to insure that all future development occurs in harmony with existing natural and man-made features of traditional or perceptual value to the community and to upgrade those existing features throughout the City which may detract from the visual character or quality of Antioch.

v

SUMMARY

This two part summary of the Antioch General Plan for future growth and development is intended to be an integral part of the official General Plan document. The summary represents an explanation of how Antioch can develop during the next twenty years when the fundamental development policies, plan proposals and recommendations of this General Plan are accepted and carried out by the citizens and officials of Antioch.

A. BASIC DEVELOPMENT POLICIES

1. The City may consider transferring densities within a designated neighborhood area. However, the maximum holding capacity established by the total density or densities in the neighborhood shall not be exceeded.
2. Those specific areas within a neighborhood designated on the General Plan as being capable of handling higher densities should be evaluated first when considering density transfer at the implementation stage. If only one density has been designated for a neighborhood area and density transfer is considered for a specific location, then the following criteria should be kept in mind.

- (a) Existing land use;
 - (b) Physical limitations of the parcel or parcels;
 - (c) Community facilities available;
 - (d) Circulation pattern.
-
- 3. The area within the line of urbanization of Antioch represents moderate growth up to a population holding capacity of 60,000.
 - 4. The community of Antioch shall be developed on the basis of neighborhood service areas.
 - 5. The line of urbanization depicted in the Land Use Map shall serve as the boundary of the proposed urban area and future development shall not extend beyond such line.
 - 6. Within the time frame of the General Plan, future regional commercial development shall be limited to the existing County East Regional Shopping Center site and its adjacent commercial area.
 - 7. The City shall allow only neighborhood convenience centers south of Freeway 4 where such centers have been appropriately designated within neighborhood service areas.
 - 8. The City shall promote the development of the Central Business District as a specialty shopping area and encourage development of the downtown area as the cultural, entertainment and historical center for Antioch.
 - 9. The City shall promote the development of industrial parks along major circulation and transportation facilities.
 - 10. In cooperation with the Antioch School District, the City shall require the development of park sites adjacent to school properties whenever feasible and continue the requirement of housing developers to provide an appropriate area of their site for active open space, park and recreational use or the payment of "in lieu" fees.

11. The City shall provide an organized system of open spaces throughout the community by utilizing existing and proposed parks, utility easements, natural drainage areas, and those areas unsuited for urban development due to unsafe geological conditions and severe topographic features.
12. Future development adjacent to the San Joaquin River or other natural features shall be planned in such a manner to provide maximum accessibility to the river or natural features for public use and enjoyment.
13. The City shall retain the present predominance of single-family residences throughout the community and promote the development of smaller residential neighborhoods which have their own distinct identity.
14. The site for a future City Hall shall be located in the downtown area and be designed in conjunction with a community center to ensure adequate facilities for town meetings and events related to governmental and community affairs, recreational and cultural activities.
15. The City shall promote the development of federal, state, special district, county, and local governmental office facilities within the downtown area especially within or adjacent to the Central Business District to provide a further civic focus and revitalization effect.

B. MAJOR PLAN PROPOSALS

1. Future Growth and Population

The City of Antioch cannot be permitted to grow indefinitely without serious impacts on the existing natural resources, environmental features and amenities which contribute to the quality of life presently enjoyed by Antioch citizens. In line with the recommended growth policy for the City of Antioch, the General Plan has been developed on the basis of a 60,000 population limit - this being the maximum number of persons which can be adequately accommodated in the Antioch

Planning Area without seriously affecting environmental features or the City's capacity to adequately provide municipal services and without significantly altering the character and image of Antioch as a desirable low density river-foothill oriented residential community.

This growth policy, combined with the recommended variable residential densities as set forth in the Land Use Element of the General Plan establishes the future population of Antioch to range from 41,400 to 64,613 people approximately. The General Plan provides for the distribution of population in Antioch in planned residential areas, varying from low-density residential areas to medium and high-density multiple-family units. Future population in Antioch will be generated predominantly by low-density residential development housing an additional 22,000 people with the number of multiple-family and high-density apartment developments limited and concentrated in specific areas of the community. The holding capacity of 60,000 people for Antioch is consistent with the regional growth policy formulated by the Association of Bay Area Governments and compatible with the sphere of influence proposed for the Antioch area by the Local Agency Formation Commission.

The population range serves to show that the General Plan land use proposals establish the ability to maintain a maximum population holding capacity. The variable densities will ultimately produce an actual population in the twenty-year time span somewhere between these hypothetical extremes.

2. Antioch's "Unique" Character - A Low-Density Suburban River-Foothill Oriented Residential Community

In an effort to protect the existing environmental features and promote a growth policy, the General Plan proposes that Antioch should continue to emphasize its specialized character and function in the Eastern Contra Costa County area as a low-density suburban river-foothill oriented residential community. This policy is the basis for the most important proposals of the plan. The role of the community as an industrial and business place for employment, the County East Regional Shopping Center, the atmosphere of the downtown district, the influence of the City's large group of Central Contra Costa County commuters,

the reasonable price of homes for families of average incomes, and the magnificent physical backdrop of the Mount Diablo foothills and panoramic vistas of the San Joaquin River - all of these features have contributed to the unique character of Antioch. In its attempt to appreciate and strengthen these qualities, while at the same time attempting to provide for controlled growth, the General Plan proposes those changes that are judged to be necessary and desirable to maintain a viable community.

3. Land Use

The General Plan is based upon the findings that there are five essential uses of land in Antioch. These are: (a) residential land use with accompanying neighborhood parks, schools and churches; (b) commercial land use; (c) industrial land use; (d) conservation, agricultural and resource management land use; and (e) recreation and open space land use. The plan proposes a balance of both public and private land uses throughout the community, with each part of the City devoted to its most suitable purpose. The plan recommends specific development policies for medium and high-density residential, commercial and industrial uses.

4. Residential Areas

The General Plan proposes a series of residential neighborhoods in Antioch, each of which will be sufficient in size to adequately support essential residential services and facilities such as schools, parks, churches and convenient shopping centers and each of which will, insofar as is possible, be kept free of large volumes of through traffic and other disturbing influences. The plan calls for a predominance of low-density residential development in the eastern, southeastern and southwestern sections of Antioch. In order to provide a variety of new housing types and lot sizes, a series of variable residential densities are proposed in the General Plan. Densities for low-density residential development range from one to two DU per acre on hilly terrain, two to four DU per acre on flatter land with minor geographical, topographical, or environmental constraints, and four to six DU per acre for typical subdivisions or developments on level terrain with no such constraints. Multiple-family and high-density apartment development is proposed

for the peripheral ring of the County East Regional Shopping Center south of Freeway 4 at Hillcrest Avenue and in the downtown core area of Antioch. High environmental standards are recommended for all new housing developments.

The Housing Element influenced the allocation of residential land use. However, it is far more important as a method by which Antioch may address the problems of its housing market. It deals with those policies and programs for improvement and maintenance of existing housing stock in addition to housing needs of present and future population.

5. Commercial Areas

Commercial uses are proposed broadly in four classes. Three classes are essentially self-defined by their geographical unit designations as 1) Regional, 2) Community, and 3) Neighborhood commercial areas. The fourth category of general commercial provides for a broad spectrum of uses and is capable of being applied to most areas indicated for commercial use. General commercial may also indicate areas where clustering of specialized, compatible, or similar commercial uses may occur such as the downtown area, which is discussed separately due to its unique characteristics.

Neighborhood convenience centers are proposed at twelve commercial areas. Community level commercial facilities are proposed on the plan at eight locations. The East County Regional Shopping Center is designated on the plan south of State Freeway 4 east of Somersville Road. Additional off-street parking, landscaping, undergrounding, sign control, site and building design review is recommended in connection with future commercial development. Some 476 acres of commercial development is proposed with approximately 439 acres allocated for the shopping and services and 37 acres for offices.

TABLE V-I
ANTIOCH GENERAL PLAN
RESIDENTIAL LAND USE STANDARDS

<u>Classification</u>	<u>Net Acres Allocated</u>	<u>Maximum* Dwelling Unit Generation</u>
<u>Low Density</u>		
Up to 2 DU/net ac.	492	984
Up to 4 DU/net ac.	792	3,168
Up to 6 DU/net ac.	1,951	11,706
Total Low Density	3,235	15,858
<u>Medium Density</u>		
6 to 10 DU/net ac.	344	3,440
<u>Multiple Family</u>		
10 to 15 DU/net ac.	50	750
15 to 20 DU/net ac.	115	2,300
Total Multiple Family	165	3,050
Residential Land Use Totals	3,744	22,348

*Even though in all cases something less than the top density figure will result on a practical level, for purposes of this table and the Land Use Element a hypothetical maximum will be utilized.

Source: Lampman and Associates, 1974.

TABLE V-II
ANTIOCH GENERAL PLAN
POPULATION HOLDING CAPACITY

	<u>Person/Unit</u> ¹	X	<u>No. of Units</u> ³		=	<u>Population</u>	
			<u>Low</u>	<u>High</u>		<u>Low</u>	<u>High</u>
Low Density Residential	3 persons/DU ²		9,880	15,858		29,640	47,574
Medium Density Residential	2.5 persons/DU		2,064	3,440		5,160	8,600
Multiple Family Residential	2.0 persons/DU		2,225	3,050		4,450	6,100
Total			14,169	22,348		39,250	62,274

Source: Lampman and Associates, 1974

¹Persons per unit based on 1970 Federal Census and State Department of Finance statistics and indicated trends.

²DU: dwelling unit.

³No. of units represent totals for each residential land use category.

6. Downtown Area and Central Business District

The Central Business District is a major community focal point and planned as a specialty shopping area, including unique and attractive-type shops with a strong pedestrian orientation. Expansion of business, governmental, commercial, cultural, entertainment and historical uses are encouraged and necessary for revitalization of the area. A downtown civic center complex location is recommended in connection with a community center facility. Off-street parking, landscaping, sign control, utility undergrounding, architectural treatment and specific circulation improvements are recommended.

7. Industrial Districts

The Plan provides for approximately 2,172 acres for industrial uses of which 575 acres are designated for light industrial complexes. The Plan includes the concept that riverfront or natural feature industrial areas should be planned to provide maximum accessibility to the river and natural features for public use and enjoyment. Establishment of stringent environmental performance standards are recommended in connection with industrial land use.

8. Schools

The plan shows eight existing elementary schools and proposes nine additional elementary facilities. Neighborhood parks are planned jointly with proposed elementary school sites. A 20-acre junior high site is proposed in Gentrytown and a 40-acre senior high site is proposed for the southeastern portion of Antioch north of Contra Costa Canal in addition to the existing junior high and high school plants in Antioch. Los Medanos Community College is shown on the plan in West Antioch.

9. Parks and Recreation Facilities

Parks and recreation facilities are planned on the basis of neighborhood service area. The plan calls

for a total of seven mini-parks, sixteen neighborhood parks and seven special use facilities. Regional park facilities are expanded and shown on the plan as Contra Loma Regional Park and Black Diamond Mines Park. Utility easements provide open space corridors and serve as an important ingredient of a proposed recreational trail system and park standards are recommended with major park and recreational expansion required.

10. Environmental Resources Management

The General Plan proposes an environmental resources management district to preserve and protect lands with unique environmental features and natural resources, including minerals, prime agricultural lands, wildlife habitats, aquifer recharge areas, marshes, steep lands, forest and woodlands, scenic lands and land with hazardous geological and seismic potential. An organized system of open spaces is recommended throughout the community by utilizing existing and proposed parks, utility easements, natural drainage areas, and those areas unsuited for urban development due to unsafe geological conditions and severe topographical features. Specific recommendations are also made with respect to agricultural lands, wildlife habitats, aquifer recharge areas, scenic lands, land with hazardous potentials, steep lands and marshes.

11. Streets and Highways

The General Plan proposes to link the local street and highway system to the regional freeway network. No new State freeways are proposed. Street and highway proposals include a grade separated interchange at State Freeway 4 near Los Medanos Community College in West Antioch. A major circulation proposal includes an arterial highway connection between Lone Tree Way and Paso Corto Road running westerly from the existing Lone Tree Way along the Mokelumme Aqueduct, reintersecting the existing Lone Tree Way in South Antioch and continuing westerly on the north side of Contra Costa Canal to Paso Corto Road, thence northerly from the intersection of Somersville Road along the western boundary of the City to the proposed grade-

separated interchange at State Freeway 4 continuing northerly and terminating at the Antioch-Pittsburg Highway. A number of specific street alignments, extensions and improvements are proposed on the plan, including grade separation structures for four north-south arterial streets at the Southern Pacific Railroad and continuous north-south arterial service on four facilities between the river and the southern end of the City. Specific recommendations are made for the downtown circulation system, including one-way directional flow of traffic on Ninth and Tenth Streets and constructing Fourth Street as a major street connecting with Somersville Road on the west and curving southeasterly of B Street to connect with the intersection of Wilbur Avenue and A Street on the east. In this way, east-west traffic through Antioch will have the option of direct service via Ninth and Tenth Street or a loop facility through the center of the downtown area via Fourth Street.

12. Community Design

The visual aspect of the community and the quality of its appearance are important in the pursuit of a definitive character and image for Antioch. Existing conditions of community design were inventoried and specific recommendations concerning individual visual aspects of Antioch ranging from the river to the foothills as well as man-made features were listed within the Community Design Element. Two of the more encompassing recommendations were that a comprehensive urban design study of the Central Business District be instigated and that a comprehensive community design manual be prepared to communicate urban design parameters for Antioch.

VI

**ENVIRONMENTAL
RESOURCE
MANAGEMENT ELEMENT**

A. INTRODUCTION

The Antioch Planning Area possesses a unique natural environment that can be either preserved and carefully utilized or wastefully destroyed by ignorance and mismanagement. The City of Antioch has a principal role in assuming responsibility for proper resource management and environmental protection within the jurisdictional boundaries of the City as does Contra Costa County for the unincorporated area. There is a recognized need for local and county government to preserve its environment through adopted policies and plans as evidenced by state mandates for conservation and open space planning through the vehicle of the Environmental Resource Management Element. The definition of the Environmental Resource Management Element for Antioch encompasses the process of managing, preserving, protecting and enhancing the community's natural environmental resources. The Environmental Resource Management Element includes goals and objectives, an inventory of existing ERME resources, criteria and standards, an ERME open space-conservation plan and an action program for the implementation of the ERME.

B. ERME CONCEPT

The Environmental Resource Management Element, ERME, is intended to provide the Environmental Resource Management policies and directions required in the City's long-range General Plan. The ERME brings together three mandatory elements: open space, conservation and scenic highway, and one permissive element, recreation, of the General Plan as now specified by State Law into a single functional element which may be correlated with other mandatory and permissive elements included within the overall framework of the General Plan concept. Thus, the ERME as contained in this document provides the mechanism and program to identify, evaluate and analyze Antioch's natural and open space resources in connection with the various policy implications and action programs of each General Plan element.

C. LEGISLATIVE REQUIREMENTS

In recent years, the public has become acutely aware of their vanishing open space and natural resources. As a result of increased public awareness and pressure in 1973, the State legislature enacted legislation making open space and conservation mandatory general plan elements. Subsequent legislation required that these elements be adopted prior to January 1, 1974. As a penalty for failure to adopt an Open Space-Conservation Element, no building permit may be issued, no subdivision may be approved and no open space ordinance adopted unless the proposed construction, subdivision or ordinance is consistent with the open space-conservation elements (Section 65567, Government Code).

A further potential penalty which may result from failure to adopt an open space ordinance is loss of State funds. A city is eligible to receive open space subventions which are designed to offset tax revenue, losses as a result of restrictions placed on land for open space purposes. These subventions may be withheld if the Open Space Element is not on file with the Secretary of the State Resources Agency by January 1, 1974.

Subsequently, the State Legislature enacted further legislation requiring a mandatory Scenic Highways Element to be included in

the General Plan by September 20, 1974. The State first took steps to develop a scenic highways' program in 1963 when the legislation enacted the State Scenic Highway law. That action established a State Scenic Highway System and Master Plan. As a provision of the plan, local government was given responsibility for controlling land use outside the highway right-of-way.

Section 65303 of the State Planning and Zoning Law also provides provisions for a permissive recreation element to be included in the General Plan. This element should include a map showing a comprehensive system of areas and public sites for recreation in the planning area relative to natural reservations, parks, parkways, beaches, playgrounds and other recreation areas.

D. RELATIONSHIP OF ERME TO OTHER GENERAL PLAN ELEMENTS

All of the elements of the General Plan are interrelated, but some are more directly related in policy and data input. (Refer to Figure VI-1. The ERME is a primary tool for the protection of the community's natural environment, providing critical input into the preparation of the land use and circulation elements. Further, the seismic safety and scenic highways elements have overlapping variables related to the open space and conservation provisions of the ERME. The integration of these four elements (i.e., open space, conservation, recreation and scenic highways) into the Environmental Resource Management Element in this General Plan document is a response to the inherent complexity of environmental planning. The consideration of the physical environment is a multi-faceted process. The varying scales and characteristics of environmental resources are such that they are not always amenable to facilitate categorization. In addition, there are some problems of definitional overlap between the open space and conservation elements. Consequently, the legislative mandates for these two elements cannot be interpreted singularly or carried out independently of one another. What is required is an integral context for environmental planning within which closely related aspects can be considered. As a result, the coordination and synthesis of the open space, conservation, recreation and scenic highways elements into an Environmental Resource Management Element was undertaken to assure an integrated approach for environmental planning.

E. METHODOLOGY

Recognizing the need for an integrated approach to environmental planning in the General Plan process an "Environmental Resource Inventory" was prepared for the total planning area during the initial stages of the process. The environmental inventory included an assessment of all variables related to environmental planning such as steep slopes, prime agricultural lands, hazardous lands, natural resources, scenic lands, vegetation and wildlife habitat. The inventory was prepared in conjunction with an Environmental Mapping Overlay System and covers some 32,781 acres of land area. Thus the Environmental Mapping Overlay System and the Environmental Inventory provided the principal mechanism in which the City's ERME Open Space-Conservation Plan was formulated. A written explanation of the City's ERME Open Space-Conservation Plan is provided in subsequent sections of this element and the maps and text of the "Environmental Resource Inventory" are incorporated in this Environmental Resource Management Element where appropriate.

F. RESPONSIBILITY FOR MANAGING THE ERME.

Antioch is not endowed with many of the features and natural resources that the State has designated to be preserved in the mandatory open space, conservation and scenic highways elements of cities and counties. While Antioch does not contain or have control over such features as estuaries, forest land, watersheds, significant wildlife habitats etc., to conclude that the management of such important resources is the sole responsibility of other governmental entities would be an over simplification of the complexities and challenges involved and would not be in the best interest of the citizens of Antioch. In truth, the responsibility is intergovernmental, involving city and county governments, special districts, ABAG, and other regional agencies, and state and federal governments. Responsibility also rests with the private sector landowner, farmer, sportsman and commercial and industrial operators whose activities vie in competition for the use and management of limited and scarce resources.

* HIGH CORRELATION
 • SIGNIFICANT CORRELATION

BASIC ENVIRONMENTAL RESOURCE CLASSIFICATIONS	CONSERVATION ELEMENT	OPEN SPACE ELEMENT	SCENIC HIGHWAY ELEMENT	SEISMIC ELEMENT	NOISE ELEMENT	SAFETY ELEMENT	RECREATION ELEMENT
	WATER FORESTS SOILS WILDLIFE MINERALS OTHER RESOURCES LAND AND WATER RECLAMATION FLOOD CONTROL WATER POLLUTION REGULATION IN STREAM CHANNEL EROSION (SOILS, BEACHES, SHORES) ROCK, SAND, GRAVEL	AGRICULTURAL LAND NATIONAL RESOURCE LAND RECREATIONAL LAND, WATER SCENIC LAND, WATER WATERSHED AND RECHARGE LAND WILDLIFE HABITAT	DEVELOPMENT, ESTABLISHMENT, AND PROTECTION CORRIDOR SURVEY FACILITY STUDY CORRIDOR PLAN CORRIDOR PROGRAM	IDENTIFICATION AND APPRAISAL OF SEISMIC HAZARDS FAULTING GROUND SHAKING GROUND FAILURES SEICHES	CONTOURS OF PRESENT AND PROJECTED NOISE LEVELS ASSOCIATED WITH THESE: HIGHWAYS RAIL TRANSIT AIRPORT GROUND FACILITIES	PROTECTION OF COMMUNITY FROM FIRES AND GEOLOGICAL HAZARDS EVACUATION ROUTES PEAK LOAD WATER SUPPLY MINIMUM ROAD WIDTHS CLEARANCE/STRUCTURES GEOLOGICAL HAZARD MAPPING	AREAS AND SITES FOR RECREATION, INCLUDING: NATURAL RESERVATIONS PARKS PATHWAYS (SCENIC HIGHWAYS) PLAYGROUNDS OTHER RECREATION
LAND RESOURCES Topographical Geological & Mineral Soils Seismic Areas	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *
WATER RESOURCES Lakes Rivers & Streams Ground Water	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *
AIR & CLIMATIC RESOURCES	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *
BIOLOGICAL RESOURCES Plant Life Animal Life Natural Areas	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *

MATRIX ILLUSTRATING COMPLEX RELATIONSHIP OF GENERAL PLAN ELEMENTS WITH BASIC ENVIRONMENTAL RESOURCES

FIGURE VI - 1

1. State Interest in Environmental Resource Management

Through its unique set of legal powers, State Government has much of the responsibility for the management of natural resources in California.

The State's interest in the management of resources is expressed primarily through provisions of the State Planning Law and Government Codes, and through agencies which have been created to manage resources of statewide significance. The principal agencies involved include: The Departments of Conservation, Navigation and Ocean Development, Fish and Game, Recreation, and Water Resources; the Reclamation Board; the Department of Agriculture; and the State Lands Division. With the exception of the latter two agencies, all others operate within the management umbrella of the Secretary of Resources and the Resources Agency. In addition, a considerable number of plural bodies, boards and commissions have been created by legislation. These bodies are attached to the various departments and units of government listed above and possess a wide variety of powers ranging from statutory responsibility for policy making to strictly advisory roles.

2. Delegation of State Powers to Local Entities

A variety of State laws, (Open Space and Conservation Element requirement, Environmental Quality Act provisions) have, in effect, delegated partial responsibility for resource management to local entities which perform limited functions within limited geographic areas, including irrigation, flood control and resource conservation districts. Such districts are project-oriented and generally are financed through local taxation of the lands benefitted by the projects and services provided by the districts.

3. The Responsibility of Regional Agencies

Local and regional planning agencies with jurisdictional powers in the county provide a number of different

approaches and implementation means to achieve open space and conservation objectives, and with their combined actions present an impressive force for Environmental Resource Management preservation and utilization.

a. San Francisco Bay Conservation and Development Commission

The commission has jurisdiction over open water, tidelands and to 100 feet inland from Mean Higher High Water (MHHW). In Contra Costa County, the BCDC jurisdiction extends from the southern county boundary at Point Isabel north and east to Stake Point between Martinez and Pittsburg. The charge of the BCDC is to insure that the uses of the land and water within this area provide public access to the shoreline, and to control bayfill in the public interest.

b. Association of Bay Area Governments

In June of 1970, ABAG's Regional Plan was approved. It conforms in most respects with the existing county General Plan adopted in 1963. The mutuality of these plans provides a framework for the review of Environmental Impact Reports at the regional and county levels. Since ABAG acts as a clearing house for approval of federal and state funding of local planning projects, continuing agreement between the ABAG and the County's open space plan will aid in assuring funding for projects and programs to implement the Open Space-Conservation Plan. The County-wide Open Space-Conservation Plan, indicating the adopted policies of the County, is an important reference for the continuing revision and refinement of ABAG's regional planning efforts.

c. Metropolitan Transportation Commission

In 1971 the MTC became the planning coordination agency for major transportation improvements in the Bay Area. The commission was charged with developing a comprehensive transportation plan for the region by June 30, 1973. The transportation plan reflects environmental resource management open space needs by providing for open space facilities along rights-of-way and by locating major highways so that

the open space and conservation objectives of the County will be supported.

d. East Bay Regional Park District

This agency, which serves in part as a park agency for the County, provides major park planning, acquisition, and operations for western and central Alameda and Contra Costa Counties. The Park District recently completed a master plan for future acquisitions. Recently increased revenues will aid in implementing the County's Open Space-Conservation Plan by permitting acquisition of additional areas for recreation uses.

The Park District currently does not have responsibilities for providing local parks and recreation services.

e. Utility Companies

Although not recreational agencies, major land holdings by the East Bay Municipal Utilities District for reservoirs and watershed management, and the Contra Costa County Water District and Pacific Gas and Electric Company, both with easements and rights-of-way throughout the County, are important holders of open space. These lands are increasingly becoming available for public outdoor recreation and trails. No major additional properties are anticipated to be acquired by utility companies in the near future, but they are to be commended in their efforts to cooperate with public agencies in achieving the open space objectives for outdoor recreation and trail systems.

4. The Responsibility of County Government

Without presenting a detailed analysis of the adequacy of federal, state and local district operations, it will suffice to state that the complexity of this intergovernmental distribution of resource

management activity has left a void which, at this point, places a disproportionate share of responsibility upon county and city governments to fill.

State and federal agencies and many local districts have well developed capacities for the development and execution of functional plans, (e.g., water plans, fish and wildlife plans), but only in recent years has there been any significant effort begun to look upon the interrelated aspects of resources through comprehensive resource planning programs.

Unfortunately, the state has not yet embarked on the development of a comprehensive plan for the management of the state's natural resources as it has, for example, begun a comprehensive plan for transportation.

The void referred to above goes beyond the concept of comprehensive planning for natural resources and embraces concern for the inter-relationship of resource management and urban development policies. It is here that the role of county and city governments looms large, since the counties and cities of the state possess the principal powers and responsibilities for controlling the allocation and utilization of land for all purposes. In effect then, local government finds itself in the position of having to assume a disproportionate share of responsibility for identifying and protecting natural resources of both national and statewide interest, as such interests are affected by the total land development process. Even where national and state interests are reflected by federal and state ownership of large tracts of land, the responsibility for protecting these public investments from incompatible land use on private lands within or adjacent to federal or state holdings rests with local government.

Much effort is being given to defining a new set of game rules which will enlarge state and federal interests in the land development process. The

fact remains, however, that attempts to modify the state and federal roles are still largely experimental. Efforts at the federal level to date are moving in the direction of encouraging states to assume greater responsibility for developing statewide land use policy concerning matters of statewide significance. Within California, efforts have moved in the direction of establishing environmental standards, and redefining the planning and implementation responsibility of local government. However, the State has yet to fulfill its direct responsibility for assuring the protection and conservation of open space and natural resources which are of statewide significance. This is not to say that significant efforts have not begun at the state level, but only that existing efforts remain limited in scope and impact.

5. County Commitment

Currently, the Board of Supervisors has primary control over the predominantly non-urbanized areas of Contra Costa County. These open spaces contain nodes of considerable ecologic, scenic, conservation and recreation importance; and are of importance to all citizens of the county regardless of their residence.

Within the maze of governmental and private sector responsibilities, county government has assumed a leadership role of assuring the appropriate conservation and management of open space and natural resources.

- ° The Recreation Element of the County General Plan was adopted by the Board of Supervisors on December 8, 1970. This report specified the first steps in delineating a major and local park system in the County, as well as providing an inventory of existing park facilities as of that date.

- ° In August, 1971, the Land Use and Transportation Study issued a report entitled "Inventory for the Conservation Element" which provides an overview of environmental factors within the County and identifies issues related to resource conservation.
- ° In June, 1972, the Board of Supervisors adopted an Interim County Bicycle Paths Plan specifying primary and secondary routes for recreation biking and as an alternate transportation system connecting neighborhoods, schools, parks, and other public facilities.
- ° In October, 1972, the Board of Supervisors adopted an Interim County Riding Trails Plan and an Interim Hiking Trails Plan. These trails connect major parks and other points of interest. Because of public interest, the North Gate Road area of the Riding Trails Plan has been designated a special study area.
- ° On June 27, 1973 the Board of Supervisors adopted a countywide open space and conservation plan which committed the County to the preservation and conservation of open space and natural resources of countywide and regional significance for a variety of open space uses in the unincorporated areas.
- ° On October 1973 the Board of Supervisors adopted a Scenic Highways Element as part of the Contra Costa County General Plan.

Additionally, in September of 1973, the Board of Supervisors directed the County Planning Department to embark on a comprehensive planning program for Eastern Contra Costa County. The study is envisioned to last approximately a year and a half and includes

technical background studies, committee goals and policy formulation, alternative plan, formulation and plan implementation. The study will ultimately make specific recommendations relative to future growth and development in the unincorporated area of Eastern Contra Costa County.

These actions and hundreds of other actions demonstrate that the county and other regional planning agencies have reciprocal responsibilities to assist in the preservation and enhancement of the environment for all citizens. The role of Contra Costa County government may well be the most pivotal of all participants in the planning and management of environmental resources which lie wholly within the unincorporated areas.

6. County-City Relationships

Local government plans and programs are the basis and reference point for all environmental resource planning within the County. The county has the responsibility of establishing and implementing planning policy, which recognizes the intrinsic values of local open space and natural resources as part of the regional pattern of urbanization. To the extent that environmental resources exist in and near the county's major urban areas, it is the responsibility of the county to assure that its policies and program of implementing actions will, in concert with the cities, preserve such natural and other open space areas which are needed to meet the needs of the present and future urban population. This may take the form of preserving prime agricultural lands, creeks, natural vegetation, fish and wildlife habitats, flood plains and areas having significant potential as future regional recreation areas.

7. Antioch's Commitment

The City of Antioch has primary responsibility and control over those areas which fall within its jurisdictional boundary. Like county government, the City of Antioch has taken great strides in recent

years to develop appropriate planning measures to insure the protection and management of the communities open space and natural resources.

- ° In September 1972, the City of Antioch developed in cooperation with Western Interstate Commission for Higher Education (WICHE), a Resource Development Internship Program, an interim Open Space Element for the City. The WICHE report set forth goals, policies, and an action program for the preservation of open space in the Antioch area based on an inventory of existing open space features.
- ° In April 1973, the City began to study various hillside development regulatory devices and the staff is presently in the process of drafting a hillside development ordinance in conjunction with provisions contained in the newly developed General Plan.
- ° In 1973 the City staff also prepared a comprehensive trail plan to be incorporated into the Environmental Resource Management Element of the Antioch General Plan. The plan includes trails for hiking, bicycling and equestrian use and has been closely coordinated with the Counties Riding and Hiking Trails Plans.

G. GOAL

It is the goal of the City of Antioch to conserve and enhance the unique natural beauty and irreplaceable natural resources of the community; to insure the protection and enhancement of the river and creeks, their adjoining natural beaches and shorelines, the aquatic and wildlife habitats and the natural topography, hillsides and watershed areas within the community; and to insure the protection and control of urban development within areas of cultural or historical value and natural physical hazards.

H. OBJECTIVES

1. The City should preserve and protect those areas within its jurisdiction which due to their outstanding aesthetic quality or historical value, their natural value as watersheds or prime agricultural lands, or wildlife habitats, or their high susceptibility to major hazards from such phenomenon as earthquakes, floods, or landslides, should be maintained in permanent open space.
2. The City should encourage the full utilization and opportunity within permanent open space areas for such uses as bicycle paths, hiking and equestrian trails, picnic facilities, golf ranges, etc., that would provide for the maximum public use and enjoyment of these areas.
3. The City should develop and maintain standards for the development of hillside areas, utilizing natural contour construction and adequate open space requirements, in order to preserve the natural topography, character and amenities of each area.
4. The City should secure and endeavor to develop and maintain the shoreline of the river in a manner that will insure its availability for public use and enjoyment. Proposals for the construction of anti-erosion structures, off-shore docks, or future marinas, should be examined in light of this policy.
5. The City should require or provide an organized system of parks and recreational facilities, including playlots, mini or vest pocket parks, neighborhood parks, community parks and special use facilities.
6. The City should provide recreational facilities adequate in extent and wherever possible, conveniently located to serve all residents of the community on a regional, community and neighborhood level.

7. The City should develop, preserve and enhance areas of scenic interest and determine methods to protect key scenic corridors and routes.
8. The City should continue to develop and strengthen measures which will require developers to dedicate a reasonable amount of land suitable for permanent open space or provide in lieu fees for the acquisition of property appropriate for open space use and active park use.
9. The City should develop a Master Plan for park and recreational needs which will designate specific locations for park sites throughout the community and determine the method and procedures for acquiring, improving, designing and maintaining such sites.

I. EXISTING ERME RESOURCES

1. Agriculture

The Eastern portions of the planning area lie in the fertile agricultural alluvial plain of Eastern Contra Costa County. Although land in agricultural production in the planning area is primarily suited for grazing and cultivated row crops, specialty crops and orchards are becoming increasingly popular in the far eastern reaches of the planning area.

The principal crop grown to the east of Antioch includes grapes. Although the yield of this particular crop is not significant within the planning area, grapes are grown in connection with orchard crops. Walnuts and almonds are the principal orchard crops grown to the east of Antioch between Wilbur Avenue and State Freeway 4. The orchards in this area are generally located in the County and scattered around declining residential and spot commercial uses.

Grazing is the most significant agricultural resource remaining in the central and southern portions of the planning area today. At times over ten thousand

(10,000) head of cattle roam the grassy foothills south of Antioch. Several of the largest cattle ranches in Contra Costa County are located off Empire Mine Road in the southern portion of the planning area. The terrain of Lone Tree, Horse and Deer Valleys is particularly suited for grazing during the winter months as a reliable source of water can be found in the valleys' ponds and streams.

Soils in the Antioch area are classified in accordance with the U.S. Soil Conservation Service Agricultural Land Use Capability system. This system is an interpretative grouping made primarily for agricultural purposes. The classification begins with individual soils and groups them into different categories primarily on their ability to produce common cultivated crops and pasture plants without soil deterioration over a long period of time. Soils are classified on a scale of I through VII according to their value for agriculture and their limitations for cultivation. Class I and II soils are considered prime soils for agriculture according to the national classification system. Soils in the planning area are classified II, III, IV and VI. (Refer to Figure VI-2.)

According to this system of grading soil capability approximately one-third of the planning area (11,000 acres) is considered prime soils as is indicated on the Agricultural Resource Map as Class II soils. According to the map Class II soils are principally located along the Pittsburg-Antioch plain and in the lower areas of Lone Tree, Horse and Deer Valleys east of the Mount Diablo range. In the past urban development has rapidly taken place in the western portions of the Class II category and scattered development and fragmentation of parcels has occurred from Oakley to Brentwood along the Highway 4 corridor.

Development on the highly productive Class II soils has gradually caused the agricultural value of land to decline in these areas. The great predominance of the Planning Area is class three, four and six according to the Soil Conservation Service Classification. These soils have either severe limitations and hazards or require special conservation practices prior to cultivation. Soils in the Class III category

lie east of East Antioch Creek between the San Joaquin River and the Southern Pacific Railroad right-of-way and expand in a southeasterly direction towards Oakley. Soils in this category are presently being used for scattered grape, almond and walnut crop production.

Class IV soils are found along a belt which extends down from Mount Diablo range into the central portion of the Planning Area. Class VI soils are found extensively in the Markley Canyon area and along the ridges of the Mount Diablo range which trend in a southeasterly direction across the southern portion of the Planning Area.

The principal soils in the planning area are identified with the following associations, Altamont Clay, Capay Clay, Clear Land, Diablo Clay, Delhi Sand, Los Osos Loam, Rincon Clay and Zamora Loam.

Approximately 4,200 acres of land in the planning area are currently under Contra Costa County's Agricultural Preserve Program. The State Land Conservation Act of 1965 (known generally as the Williamson Act) is the enabling legislation for the adoption of the County's land conservation program. A detailed breakdown of agricultural preserves in the Antioch planning area is provided in Table VI-1.

The aim of the land conservation program is to lessen the pressure of development on agricultural lands by granting tax benefits to those qualified landowners who agree to retain their lands in agricultural use for a set period of time.

Article 2 of the State Land Conservation Act of 1965 lists among its five reasons for adopting the Act three that set forth clearly the importance of agricultural land preservation. These are: (a) that the preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the State's economic resources, and is necessary not only to the maintenance of the agricultural economy of the state, but also for the

LEGEND

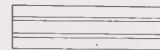
AGRICULTURAL LAND CAPABILITY
— SOIL CLASSIFICATION



CLASS II — SOILS IN CLASS II HAVE SOME LIMITATIONS THAT REDUCE THE CHOICE OF PLANTS OR REQUIRE MODERATE CONSERVATION PRACTICES.



CLASS III — SOILS IN CLASS III HAVE SEVERE LIMITATIONS THAT REDUCE THE CHOICE OF PLANTS OR REQUIRE SPECIAL CONSERVATION PRACTICES OR BOTH.



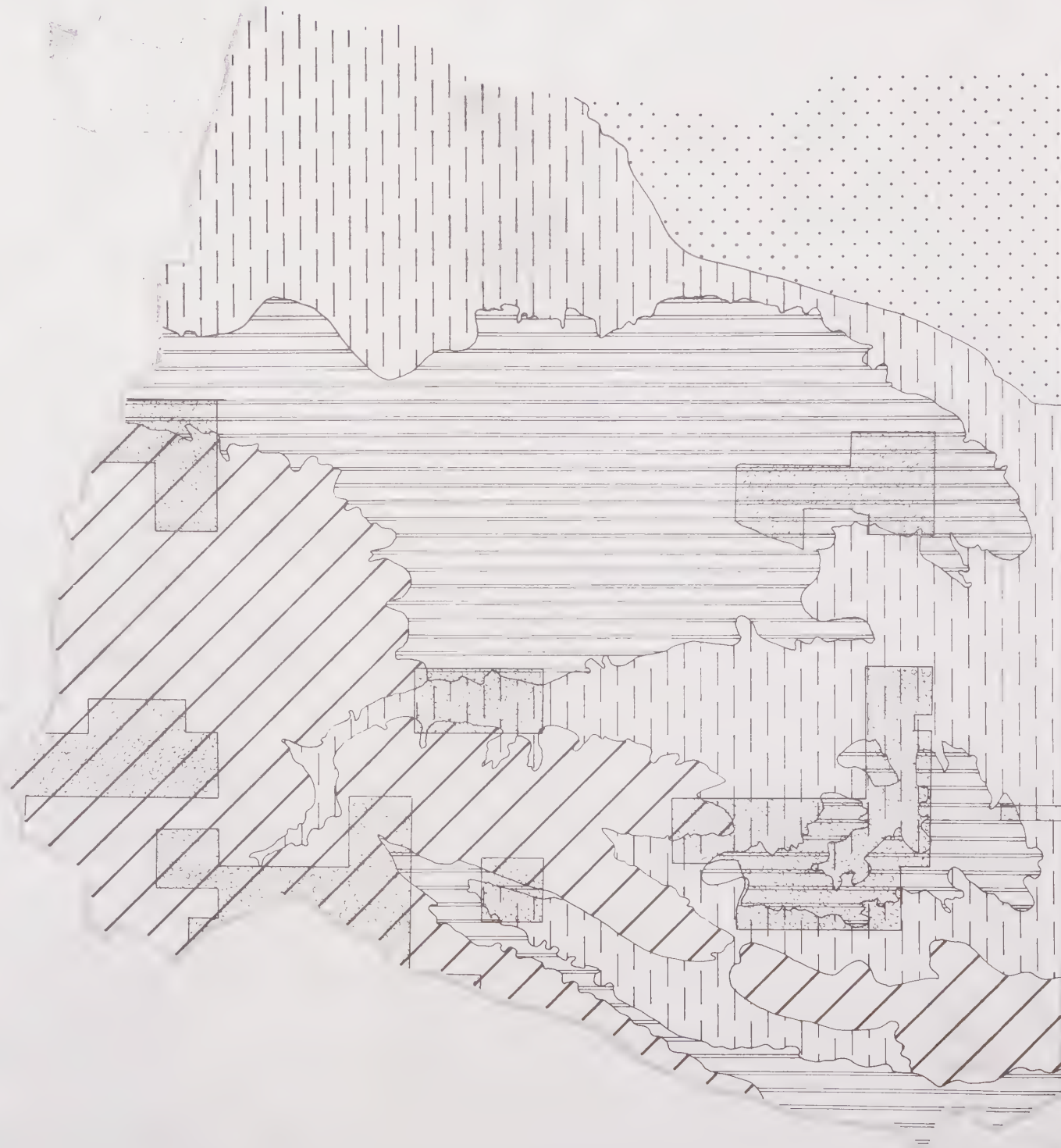
CLASS IV — SOILS IN CLASS IV HAVE VERY SEVERE LIMITATIONS THAT RESTRICT THE CHOICE OF PLANTS, REQUIRE VERY CAREFUL MANAGEMENT OR BOTH.



CLASS VI — SOILS IN CLASS VI HAVE SEVERE LIMITATIONS THAT MAKE THEM GENERALLY UNSUITED FOR CULTIVATION.



AGRICULTURAL PRESERVES



AGRICULTURAL RESOURCES

FIGURE VI - 2



TABLE VI-1

LAND IN AGRICULTURAL PRESERVES
WITHIN THE ANTIOCH PLANNING AREA

<u>Owner Of Parcels</u>	<u>Acreage</u>	<u>Contract Date</u>
Higgins	310	1969
Arata	351	1969
Ginochio	1,305	1969
Canada	349	1970
Ward and Begin	21	January 27, 1970
Thomas, G.	640	January 22, 1971
Ennes	60	January 23, 1973
Diffin	18	January 23, 1973
Ennes	960	November 27, 1973
Ormonde	<u>160</u>	November 27, 1973
	4,174	

Source: Contra Costa County, Agricultural Appraiser's
Office, August, 1973.

assurance of adequate, healthful and nutritious food for future residents of this state and nation; (b) That the discouragement of premature and unnecessary conversion of agricultural land to urban uses is a matter of public interest and will be of benefit to urban dwellers themselves in that it will discourage discontinuous urban development patterns which unnecessarily increase the costs of community services to community residents; (c) That in a rapidly urbanizing society, agricultural lands have a definite public value as open space, and the preservation in agricultural production of such lands, the use of which may be limited under the provisions of this chapter, constitutes an important physical, social, esthetic, and economic asset to existing or pending urban or metropolitan developments."

The rich deep soils of the Pittsburg-Antioch plain combined with the long, warm growing season of the Delta region and the abundant availability of irrigation waters, makes the central and southeastern portions of the planning area one of the prime agricultural areas in Contra Costa County. This basic resource warrants conscientious concern for preservation. While it is clear that an appropriate balance between urban development and agricultural use must be achieved, the prime agricultural resources of the planning area must be preserved. County controls must be developed and firmly applied in order to conserve the agricultural productivity of land within the unincorporated areas of the planning area. Two means to achieve this would be insuring that non-agricultural uses are not permitted to damage agricultural needs and continued tax relief for agricultural uses. The City must continually make the County aware of growth-inducing decisions, such as location of major highways and future residential and industrial development, and the resultant effects those decisions will have on the City. Maximum use of the Agricultural Preserve Program should be promoted and the City should require that scattered undeveloped land be the target for in-filling development before new development takes place on prime agricultural soils.

It is further recommended that areas of prime agricultural production within the planning area should be

incorporated into an Environmental Resources Management District along with other significant environmental, open space, conservation and natural resources. Administration and enforcement of the District's regulatory provisions throughout the planning area would require a joint effort by both the City of Antioch and Contra Costa County. Components of the Environmental Resources Management District are graphically illustrated on the ERME Open Space and Conservation Plan (refer to Figures VI-13 and VI-14).

2. Water Resources

Water is a most significant natural resource in the Antioch area. The long, warm summers of the California climate emphasize the importance of water in the Delta region. Not only does water sustain life for the residents of the City of Antioch; but also, it is instrumental in the agricultural economy of Eastern Contra Costa County. It also plays an important role in the quality of life within the area.

Principal water resources of significant concern to Antioch include the San Joaquin River, West and East Antioch Creeks, Contra Costa Canal, Contra Loma Reservoir, Antioch Municipal Reservoir and four municipal water reservoirs. (Refer to Figure VI-3.)

a. San Joaquin River

The San Joaquin River forms the northern boundary of the planning area. The river carries substantial volumes of water year-round and is well known for its deep water characteristics which provide excellent navigational capabilities for large vessels to Antioch's riverfront industries. The reliability of the San Joaquin River for salt-free water in recent years has gradually declined with the increased intrusion of salt water into the Delta region. Although Antioch's principal water supply in the past was pumped from the San Joaquin River and treated at the City's water treatment plant, the City is increasingly relying upon the resources of the Contra

Costa County Water District for an adequate long-term water supply.

b. West Antioch Creek

West Antioch Creek drains a watershed of approximately 8,000 acres and flows to the San Joaquin River northwest of the downtown business district. The creek does not contribute significantly to the City's water supply; however, it provides an important open space and drainage course system for the City's flood control facilities. In the past, serious flooding has occurred along the creek between State Freeway 4 and the San Joaquin River because the downstream outlet portions of the creek have not been improved to carry the storm runoff from the upper portion of the rapidly urbanizing drainage basin. The upper reaches of the creek are lined with native grasses and shrubs.

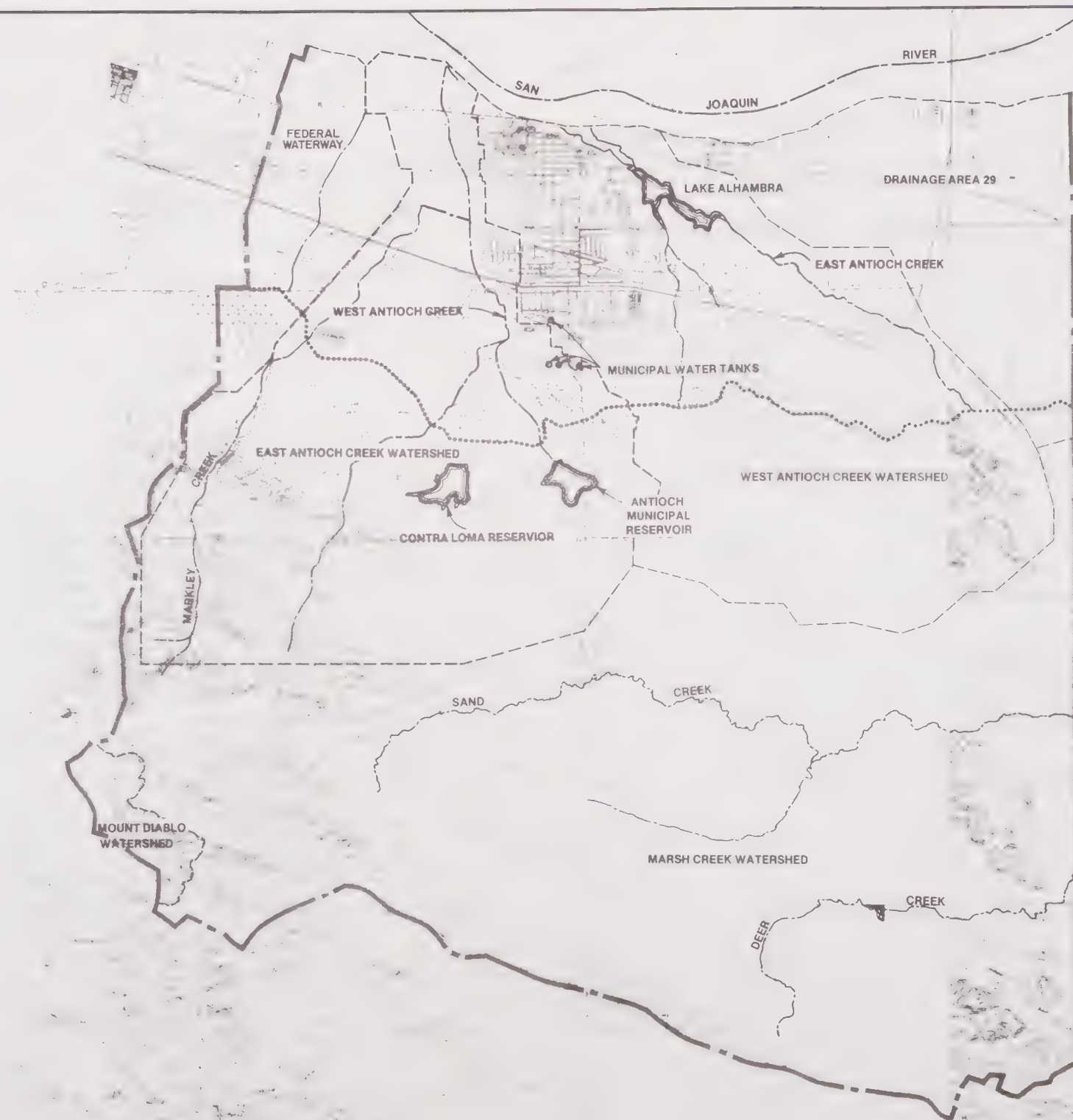
c. East Antioch Creek

East Antioch Creek drains a watershed of approximately 7,000 acres and flows into the San Joaquin River north of the downtown business district. A unique feature along this drainage course was the construction some years previously of Lake Alhambra, a private recreation lake surrounded by a housing development. The pattern of development within East Antioch watershed has been similar to that in the West Antioch watershed in that development first occurred in the downstream reaches of the water course and proceeded southerly into the middle and upper portions of the drainage area and along some of the tributary drainage courses to the main East Antioch Creek.

The existing drainage course tributaries to the East Antioch Creek are generally inadequate for either the existing storm runoff or that runoff which will occur under ultimate development conditions. However, the situation on the East Antioch Creek is not as severe as on the West Antioch Creek

LEGEND

-  WATERSHED AREAS
-  RIVERS, STREAMS and CREEKS
-  LAKES and RESERVOIRS
-  WATER TANKS
-  CONTRA COSTA CANAL



WATER RESOURCES

FIGURE VI - 3


LAMPMAN & ASSOCIATES
 0 2400 4800 7200 9600
 SCALE FEET



because there has been less encroachment into the swampy area near its outlet to the San Joaquin River, and also because Lake Alhambra acts as a retention basin during major storms. That is, that the peak flow draining into the upstream edges of the lake is reduced by approximately one-half at the downstream edge of the lake and spread over a longer period of time.

East Antioch Creek is similar to West Antioch Creek in that it does not contribute directly to the City's domestic water supply; however, it offers a natural drainage area with similar open space features.

d. Contra Costa Canal

Contra Costa Canal was placed in operation in 1940 and is the responsibility of the U.S. Bureau of Reclamation. The canal is the principal water source for the area comprising the Contra Costa County Water District. The canal is supplied via an open channel from Rock Slough on Old River and a main pumping station in Oakley.

e. Contra Loma Reservoir

Contra Loma Reservoir began operation in December, 1967, as part of the U.S. Bureau of Reclamation's Delta Division of the Central Valley Project. Water is conveyed to the 2,095 acre feet reservoir from the Contra Costa Canal system. The reservoir is filled by pumping from the Contra Costa Canal during periods of low demand. Thus, the off-stream reservoir provides peaking requirements and system reliability of the existing Contra Costa Canal in case of power outage of the Contra Costa Canal pumps. Recreational facilities for boating, fishing, picnicing and aquatic sports are provided at the Contra Loma Reservoir by the East Bay Regional Park District.

f. Antioch Municipal Reservoir

Antioch's municipal reservoir provides supply reliability and sufficient volume for regulating or equalizing the City's demand for raw water from the Contra Costa Canal. Located just south of Antioch in the foothills west of Lone Tree Way, the reservoir also serves the secondary purposes of flood control and impoundment of local runoff. Water production from the small tributary watershed, however, is of negligible importance.

g. Municipal Water Reservoirs

Antioch's domestic water supply is stored in four municipal water reservoirs within the City. Raw water from the municipal reservoir and from the Contra Costa Canal is delivered to the City's Water Treatment Plant where it is treated and delivered to either Reservoir No. 1 or 2, which have a combined capacity of 2.0 million gallons and serve the pressure Zone One system, or pumped to the two pressure Zone Two reservoirs with a total storage capacity of 3.5 million gallons. The four municipal reservoirs are located as follows:

<u>Reservoir</u>	<u>Location</u>	<u>Capacity</u>
Water Reservoir No. 1	D Street North of Putnam	1.0 mg
City Water Treatment Plant and Reservoirs Nos. 2 and 3	West of Lone Tree Way	No. 2, 1.0 mg No. 3, 0.5 mg
Water Reservoir No. 4	Lone Tree Way East of Treat- ment Plant	3.0 mg

3. Hazardous Lands

Some lands must be retained in an open space state as they are hazardous to public safety. Such lands present natural hazards such as: geologic (fault zones, steep slopes, etc.), soils (erosion, subject to liquefaction, etc.), water (flood plains, etc.). (Refer to Figure VI-4.)

Although very little seismic activity has occurred in the Antioch Planning Area and the seismic risk is considered moderate compared to other areas in California, two major faults are known to be located in the planning area. The "Antioch Fault" trends southeasterly from the north-central portion of the City and joins the "Davis Fault" south of Lone Tree Valley. The Davis Fault trends in a northerly and southerly direction through the mid-easterly portion of the planning area. While the seismic risk of both faults is considered moderate, recent investigations reveal evidence suggesting that surface distress features (off-set curbs, gutters and structural damage) may be directly related to movement along the Antioch Fault. Refer to the Seismic Safety Element for a more complete analysis of seismicity in the planning area.

A number of potential landslides and areas of land slippage have been located in Upper Markley Canyon and particularly in the steep, mountainous terrain in the southwest portion of the planning area. Property damages have been relatively minor because this region is not extensively developed.

Inasmuch as the Antioch area is in a region of generally low to moderate seismic shaking potential and only a relatively small portion of that area is underlain by soft soils and shallow groundwater, the liquefaction hazard in the majority of Antioch and the planning area is assessed as low.

Flood hazards pose a serious development constraint in the Antioch planning area due to the fact that the low elevations in some areas are prone to flooding particularly along West and East Antioch Creeks and San Joaquin

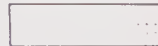
River. Localized flooding or surface drainage problems are most likely to occur along the drainage basins of both West and East Antioch Creeks. These areas should be improved as major drainage channels and open space corridors through the community.

Lands with hazardous potentials can be of value for agricultural, grazing, scenic and other uses related to resource management.

4. Mineral Resources

To date, the principal activity related to mineral extraction in the planning area has been the dredging for sand along the south shore of the San Joaquin River. At one time, sand pit operations were being actively pursued in the area east of Willow Avenue between Oakley Road and State Freeway 4 east of Antioch; however, in recent years, activity in this area has been limited. Gravel resources are also abundant throughout the planning area; however, active operation has taken place primarily in the central and southern half of the planning area. There are several sources of gravel in the central portion of the planning area near the Contra Loma Reservoir and gravel resources are abundant throughout Markley Creek Canyon. Several smaller quarry operations are located in the planning area further to the south in the hillsides of upper Lone Tree Valley. Oftentimes, abandoned gravel pits remain as scars upon the land without any plans for future uses. Major rehabilitation is expensive and usually needed to return these areas to a state in which they can serve some useful purpose after they lose their capability to yield the deposits for which they have been excavated. One possible method for controlling the dredging operations would be to establish charges which would be required for all use permits for this kind of operation. The fees could be returned when it has been shown that the user has operated the quarries in respect to rehabilitation and reuse. Some potential worthwhile uses of inactive gravel pits include temporary landfill, recreation or industrial purposes. Existing pits still in operation should be evaluated to determine their potential for other uses and when opportunities exist, operators should be

LEGEND

-  FLOOD PLAINS
-  STEEP LANDS (25% SLOPE OR GREATER)
-  SURFACE FAULTS
-  SUBSURFACE FAULTS



HAZARDOUS LANDS

FIGURE VI - 4



encouraged to consider a rehabilitation plan. The responsibility for quarry and gravel pit operations with respect to fee assessment and code enforcement would be with either the City or County depending upon the location of the operation. (Refer to Figure VI-5.) The County currently has an ordinance which regulates the location, operation and rehabilitation of quarries to be excavated.

In cooperation with the County, the City of Antioch should request a survey be conducted by the State Division of Mines and Geology to determine the precise location and extent of the valuable sand and crushed rock deposits and other special mineral resources. Further, the City and County should zone certain areas where valuable deposits exist to protect them for future recovery where this is compatible with existing uses and to plan and design future development in the vicinity of valuable deposit zones to permit appropriate quarrying to take place while prohibiting development of the deposit areas for other land uses.

Historically, coal was a significant mineral resource in the Antioch area; however, this resource is no longer being mined. In the 1850's, coal was discovered and mined in the hills of the Mount Diablo range at Stewartsville, Somersville and Nortonville. While the remaining coal deposits are not currently economically feasible for production, the old mine sites are of considerable historical interest.

Petroleum and natural gas deposits have recently been discovered in the rolling foothills southeast of Lone Tree Valley as part of the Brentwood Field. Shell, Sinco and Termo Oil Companies are currently pumping approximately 900 to 1,200 barrels of oil per day from the field. Although most of the oil is distributed from the western portion of the Brentwood field through a pipe line to the Martinez refinery, certain quantities are distributed to the Standard Oil tank farm southwest of Antioch and to the Dow Chemical Plant west of Antioch in Pittsburg. A major portion of the petroleum operation in the Brentwood Fields is devoted to the production of natural gas. Shell

Oil Company alone produces approximately seven to ten million cubic feet of natural gas per day. The production of petroleum and natural gas within the planning area provides valuable resources, which warrants the protection of adequate conservation measures. The County's open space and conservation plan identifies the importance of these resources and designates the protection of these resources on its open space and conservation element.

5. Vegetation

The natural vegetation of the Antioch Planning Area was originally native grasses and woodlands. It is edged by marshes along the shoreline of the San Joaquin River. Native grasses once covered 90 per cent of the planning area with variations in dampness and soil type resulting in a wide range of plant species.

With reference to particular plant species, the Primrose (*Oenothera deltoides* variety *holwllii*) and annual wallflower (*Erysimum capitatum* variety *angustatum*) grow wild and are uniquely indigenous to the sand dunes overlooking the San Joaquin River just east of Antioch. Faced with extinction, the Primrose normally blooms in September of each year. Although attempts have been made to transplant the Primrose in other geographical areas, namely to the Brannan Island and Dillon Beach area, the flower seems to flourish only along the San Joaquin River in the sand dune area. The wallflower is also struggling for its existence in the diminishing dune area at the present time; however, it is in no imminent danger of extinction since the flower has more recently been adapted to garden cultivation by botanists.

Other plant species prominent in the Antioch area include the San Pablo Bay Aster, (*Aster chilensis* variety *lentis*) the shrubby butterweed (*Senecio douglasii*), deerweed (*Lotus scoparium*), telegraph weed (*Heterotheca grandiflora*), and a tall and lax form of California poppy (*Eschscholtzia californica*).

LEGEND

- S SAND
- G GRAVEL
- C COAL
- P PETROLEUM STORAGE AND DISTRIBUTION
- ⊙ PETROLEUM AND NATURAL GAS



MINERAL RESOURCES

FIGURE VI - 5



Native grasses still dominate the south central portion of the planning area's vegetation pattern although native grasses have been replaced by pasture grasses in the more fertile valleys of the planning area.

At the higher elevations in the southwestern portion of the planning area the terrain is spotted with woodlands. Woodlands on the northeast facing slopes include oaks, California bay, madrone and buckeye with a number of shrubs and types of brush, including Coyote brush, Ceanothus, manzanita, scrub oak and other Chaparral associates at the lower elevation. Riparian woodlands, with the same species as woodlands plus willows, alders, cottonwood and other moisture-loving trees and shrubs, are found along stream channels and in canyon bottoms at the higher elevations. (Refer to Figure VI-6.)

6. Wildlife

Wildlife has two basic needs, food and cover. In order to preserve the wildlife of the planning area, habitat must be preserved. Although a great deal of wildlife habitat in the planning area is associated with the San Joaquin River, the Delta and other waterways, there still exists large amounts of habitat throughout the grasslands, foothills and mountain terrain of the Mount Diablo range south of Antioch.

Wildlife associated with the grasslands habitat includes very large populations of rodents, meadow-nesting birds, and the predatory birds and larger mammals which come into the grasslands to feed.

Insects and rodents in cultivated areas are being controlled almost entirely by chemical means. Combinations of biological and chemical controls are being developed. These are expected to prove both cheaper and more effective in the long run and will also reduce the risk of long-term environmental damages, such as the extreme loss of insectivorous birds which has occurred in this state.

Brushlands are a vital breeding and shelter area for mammals and birds, as well as providing entire habitat conditions for reptiles, amphibians, birds and small mammals.

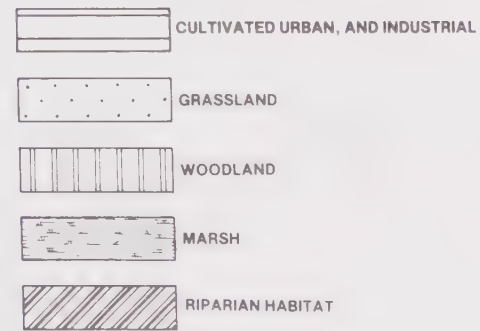
It is thought that an increase in brushlands through clearing, grading, land reclamation projects and landscape planting has resulted in an increase in the deer population in recent decades. The numbers of predatory mammals typical of brushland have been reduced by predator control programs and increased urbanization. Woodlands also have their all year natives plus birds and larger mammals which rest and breed in the shelter of the trees but range widely for food.

Water-associated habitat of the planning area provides a valuable resource - not only in terms of maintaining food and cover for animals, but also as a scenic resource. The riparian habitats (related to water) of the San Joaquin River are particularly important. Wildlife associated with these habitats include fish, shellfish, water fowl, predatory birds, amphibians, and mammals. The migratory route of bass, steelhead, salmon and sturgeon more along the San Joaquin River system and spawning and nursery grounds are located in marshes, coves and the shallow waters of the bays in the river system.

Water fowl rely on marshes, tideflats and shallow water for feeding and resting. Water fowl which rest along the banks of the San Joaquin River also require upland brush along the edge of marshes for shelter and nest security. The Antioch Municipal Reservoir and the Contra Loma Reservoir also provide important nesting grounds for water fowl in the planning area.

Three significant riparian habitats are located in marshes within the planning area. One is situated along the lower portion of East Antioch Creek. The second is located north of the Santa Fe Railroad tracks between L and J Streets, immediately adjacent to the banks of the San Joaquin River. The third and largest riparian area is located along the San Joaquin River north

LEGEND



VEGETAL COVER

FIGURE VI - 6



of the Santa Fe Railroad tracks in west Antioch.
(Refer to Figure VI-6.)

Based upon discussions with members of the Wildlife Conservation Department of the State of California, the riparian wildlife in the Antioch planning area is excellent and should be recognized as one of the important natural resources of the region. Some of the best riparian wildlife in the area can be found along the San Joaquin and Sacramento Rivers and on Sherman, Kimball and West Islands.

The primary riparian birds in the area consist of quail, songbird and paper owls. There are numerous other species which may exist to varying degrees within the region. The riparian habitat of the Antioch area provides a compatible environment for the following mammals:

Virginia opossum	gray fox
raccoon	beaver
mink	muskrat
river otter	deer mouse
striped skunk	black rat
spotted skunk	black-tailed deer

Migratory water fowl which may reside within riparian areas include:

Mallard	Snow Goose
Pintail	Whistling Swan
American Pigeon	Shoveler
Coot	Cinnamon Teal
Canadian Goose	Green-winged Teal
White Fronted Goose	

Other birds which reside in or visit riparian areas in the Antioch region include:

California Gulls	Great Blue Heron
Ring Billed Gulls	Common Snipe
Redwinged Black Bird	Marsh Hawk
Yellow Headed Black Bird	Yellow Warbler
	Long Billed Marsh Wren
	California Yellow-Billed Cuckoo

Amphibians and reptiles native to the riparian areas include:

Salamander	California Red Legged Frog
California Tiger	California Yellow Legged
Salamander	Frog
Southern Pacific	California Legless Lizard
Terrapin	
Alameda Striped Racer	Giant Garter Snake

According to the California Fish and Game Department several species of birds and reptiles in the Antioch area are classified as rare endangered species. The California Legless Lizard is uniquely indigenous to the Antioch sand dune area adjacent to the San Joaquin River. Therefore, the preservation of this geological formation will be critical in protecting the life span of the California Legless Lizard. Other rare species include:

Alameda Striped Racer (*Masticophis lateralis euryxanthus*) a slender, fast-moving snake which is distributed in the valleys and foothills of the Mount Diablo area.

California Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*) a robin-sized brown bird with white underparts, cinnamon colored outspread wings which is never found far from dense streamside growth along the Sacramento and San Joaquin Rivers.

Giant Garter Snake (*Thamnophis couchi gigas*) a large, brown checkered garter snake which is found on the floor of the Central Valley from Sacramento and Antioch southward to Buena Vista Lake. This is the most aquatic of garter snakes and thrives in sloughs and marshy areas.

7. Historic Preservation

One resource often overlooked is the heritage of a community which belongs to all who have or will reside

in the Antioch area. One way of allowing people to share in the knowledge of the community's past is to provide information about and physical evidence of what it was like in earlier years.

Antioch is fortunate to have several buildings which reflect architecture of earlier periods in American history. These buildings stand as landmarks in a community which has grown in size and changed in architectural style and building methods. Two examples of older buildings are the "Hard Building" home of Antioch's first mayor located on the southeast corner of First Street and J Street at 811 First Street, and the Antioch Lumber Company located on East Second Street between D and E Streets. Odd Fellows Hall and the Atchison-Topeka and Santa Fe Railroad depot are other buildings which have played a significant role in the development of Antioch and should be recognized as historical resources. The architectural preservation of significant houses reflecting Antioch's heritage will be discussed in the Housing Element.

A greater appreciation and understanding of the history of Antioch is worth developing and conserving. It will be necessary for interested individuals to take the initiative to look into the past and to discover historical information and opportunities worthy of preserving for the benefit of all.

8. Archaeology

Although portions of Contra Costa County are well known for their valuable archaeological resources, no specific studies have been conducted to determine the availability of archaeological resources in the planning area. A thorough check of the archaeological records at the University at San Francisco and the State Department of Parks and Recreation in Sacramento indicates that no official archaeological investigations have been recorded in the planning area. This does not mean that no sites exist within the planning area, but merely that an investigation has not been conducted and recorded by the above institutions.

In order to better identify the extent of archaeological sites in the planning area, the City of Antioch should cooperate with the County in securing a professional archaeologist to conduct a comprehensive survey for archaeological resources. The findings of this study would be particularly valuable as input for future environmental impact report assessments in the planning area. The following individuals are interested in preserving the archaeological resources of the State of California and should be consulted in the event of an archaeological finding in the planning area.

Dr. Michael Moratto
Society of California Archaeology
c/o Treganza Anthropology Museum
California State University
Department of Anthropology
1600 Holloway Avenue
San Francisco, California 94132

Dr. R. F. Hoizer
Archaeological Research Service
University of California
Berkeley, California

Francis A. Riddell
State Department of Parks
and Recreation
Sacramento, California

9. Air Quality

Air quality standards have been set by the State of California and the Environmental Protection Agency (EPA) under the Clean Air Act of 1969 (refer to Table VI-2). Although the more stringent Federal standards must be met by 1977, the California standards are used by the Bay Area Air Pollution Control District (BAAPCD). These air quality standards are routinely exceeded for photochemical oxidants and particulates in all geographical areas within the nine County Bay Region. (Refer to Table VI-3.) Data

TABLE VI-2

SUMMARY OF AIR QUALITY STANDARDS SET BY
STATE OF CALIFORNIA AND ENVIRONMENTAL PROTECTION AGENCYScope - EPA Regulations, Section 50

- a) This section provides for primary and secondary air quality standards.
- b) Primary ambient air quality standards are the levels judged necessary with adequate safety margin to protect public health.
- c) Secondary ambient air quality standards are the levels judged necessary to protect public welfare from any known or anticipated adverse effects of a pollutant.
- d) Standards shall not be considered as allowing any significant deterioration of existing air quality in any portion of any state.
- e) States may set more stringent standards.

Air Quality Standards

Pollutant	Federal		California		Averaging Period	Notes
	Standard	ug/m ³	ppm	ppm		
Carbon Monoxide	Primary & Secondary	10	9	10	Maximum 8 hour concentration	1,4
		40	35		Maximum 1 hour concentration	1
Photochemical Oxidants	Primary & Secondary	160	.08	0.1	Maximum 1 hour concentration	1
Hydrocarbons		160	.24		Maximum 3 hour concentration	1,3
Nitrogen Dioxide	Primary & Secondary	100	.05	0.25	Annual arithmetic mean	5
Sulfur Oxides	Primary	80	.03		Annual arithmetic mean	
		365	.14	0.04	Maximum 24 hour concentration	1
	Secondary	60	.02		Annual arithmetic mean	
		260	.10			1,2
		1300	.50	0.5	Maximum 3 hour concentration	1,5
Particulates	Primary	75	-	60	Annual geometric mean	6
		260	-	100	Maximum 24 hour concentration	1,6
	Secondary	60	-		Annual geometric mean	2
		150	-		Maximum 24 hour concentration	1,2

- Notes:
- 1) May be exceeded not more than once per year.
 - 2) Guide for state implementation plan preparation.
 - 3) Guide for meeting Photochemical Oxidant standards only.
 - 4) California standard, maximum 12 hour concentration.
 - 5) California standard, maximum 1 hour concentration.
 - 6) California standard, particulates indicated in ug/m³.

Source: Reproduced from "Air Quality Standards set by State of California and the Environmental Protection Agency", EPA 40CFR50/36 FR22 384, November 25, 1971, California, Reference 2.

TABLE VI-3

AIR POLLUTION IN THE BAY AREA--1971--BY STATION

For oxidant and nitrogen dioxide, "max" is highest hourly average value expressed in parts per million. For carbon monoxide "max" is highest 12-hour average value in parts per million. (The one-hour standard for CO was never exceeded during the year.) For sulfur dioxide, "max" is highest 24-hour average value expressed in parts per million. For suspended particulates, "mean" is the annual geometric mean in micrograms per cubic meter.

Stations	Oxidant		Carbon Monoxide		Nitrogen Dioxide		Sulfur Dioxide		Suspended Particulates	
	Max.	°	Max.	°	Max.	°	Max.	*	Mean	**
San Francisco	.19	2	11	3	.27	1	.033	0	47	2.0
San Rafael	.18	9	8	0	.12	0	.012	0	46	3.8
Richmond	.28	7	13	1	.19	0	.043	0.4	44	0.6
Pittsburg	.20	23	6	0	.15	0	.031	0	41	5.1
Walnut Creek	.23	36	-	-	-	-	-	-	-	-
Oakland	.31	10	11	2	.25	1	-	-	-	-
San Leandro	.36	21	-	-	-	-	-	-	-	-
Fremont	.33	45	9	0	-	-	.007	0	58	11.2
Livermore	.23	52	8	0	.19	0	.006	0	70	15.5
San Jose	.15	14	14	12	.24	0	.006	0	77	25.3
Redwood City	.28	17	7	0	.20	0	.012	0	32	1.9
Burlingame	.17	5	10	1	-	-	.015	0	59	12.9
Petaluma	.12	6	-	-	-	-	-	-	-	-
Napa	.14	9	9	0	-	-	-	-	-	-
Vallejo	.19	11	13	6	-	-	-	-	-	-
Fairfield	.18	12	-	-	-	-	-	-	-	-

°Number of days ambient air quality standard was exceeded.

*Percent of observed days when ambient air quality standard was exceeded.

**Percent of observed days when ambient air quality standard for 24 hours (100 ug/m³) was exceeded.

Source: Reproduced from "Air Pollution and the San Francisco Bay Area", BAAPCD, 7th Ed., 1971.

is not available for the City of Antioch; however, favorable climatic conditions including normal wind patterns keep the planning area relatively clear of most pollutants.

The Bay Area Air Pollution Control District in September of 1972 reported a "broad improving trend" over the years 1969 to 1971 in overall air quality in the Bay Area. The improvement, it was noted, was due to some extent to favorable weather. Trends indicate that the air quality in the entire air basin will keep improving due to increasingly stringent regulation and enforcement procedures which include retrofitting emission control devices on older cars as well as improved emission controls on new cars.

Improvements in air quality can also be obtained in the future by further reducing the dependence on the automobile and the promotion of energy conservation in the home. Examples of such conservation methods could involve the promotion of bicycling, public transit and car pooling.

Meeting the air quality standards will be difficult to achieve in future years; however, with assistance from local industries and a conscious effort by the community, air quality standards in the Antioch area should be improved. Antioch alone cannot alter the air quality in the Delta area but acting in concert with other communities (who in aggregate are the source of the problem) should play a significant role in reducing the amount of pollutants in the air.

10. Scenic Features and Routes

The unique geological formation of the Mount Diablo Mountain range south of Antioch provides a magnificent backdrop for the community with a variety of elevated vista points and scenic overviews of the San Joaquin River plain. In addition to a pleasant backdrop, the rolling foothills and grassy hillsides to the

south provide visual relief from the existing development in the Antioch area. The scenic quality of the terrain is also complemented by seasonal color change to the vegetation cover (Refer to Figure VI-7).

The City's unique geographical setting is enhanced by scenic qualities ranging from broad river vistas to meandering greenbelt linkages and panoramic views of Mount Diablo. To the southwest of Antioch, Markley Canyon provides an area of unique geological formation and should be preserved as an area of unique scenic and historical interest. The canyon lined with native grasslands and trees was once the site of several productive coal mines, and consequently remains as an area of historical significance.

The Open Space and Conservation Element of Contra Costa County recognizes the beautiful scenic quality of the County by stating that the "visual quality must be supported before the fact of development, not after, and must be an integral part of both planning and specific designs in order to maximize the existing beauty of the County and ensure that future development does not lead to blight".

The State of California has also recognized scenic beauty in the Antioch Area. State Freeway Route 4 running through Antioch is part of the State Scenic Highway Plan and has been designated as a Scenic Highway by the County. The basic qualities of a scenic highway as outlined by the State include:

- ° Quality in scenic, natural and/or recreational interest
- ° Variety of terrain and landscape.
- ° Adequate design and safety.
- ° Accessibility to public recreation, parks and points of scenic, cultural and historical interest.

LEGEND

- DESIGNATED STATE SCENIC HIGHWAY
- PROPOSED COUNTY SCENIC HIGHWAYS
- GREENBELTS, WATERCOURSES, LINKAGES
- SCENIC VISTA
- CONTRA COSTA CANAL



SCENIC FEATURES

FIGURE VI - 7



- ° Compatibility with open space objectives such as conservation of open space, outdoor recreation, etc.

11. Trails

Trails for transportation and recreation can be significantly enhanced by having visual access to scenic lands. A number of trails are proposed in the Antioch area for hiking, bicycling and equestrian use. The City of Antioch has coordinated its proposed trail system with Contra Costa County and the East Bay Regional Park District to develop a regional trail network throughout the planning area. Specific proposals for trail locations within the City and the planning area are designated on the Trail System Map (refer to Figure VI-8). Scenic trail possibilities outside the City limits include areas along the Contra Costa Canal, Mokelumne Aqueduct, Markley Canyon and Black Diamond Mines Regional Park.

12. Open Space and Recreational Resources

Open Space and Recreational Resources can be man-made (parks) or natural, such as rivers, mountains etc. The development and use of the City's open space and recreational resources is as varied as the imagination and interest of the user. Recreation is for all ages and can be enjoyed on an individual or group basis. Open Space and recreational opportunities must be provided in every community which desires to enhance the quality of life enjoyed by its citizens.

Current recreational and open space opportunities in Antioch revolve around the facilities of the public parks, schools, special use facilities, regional park and private/commercial recreational facilities (refer to Figure VI-9). There are presently 60.4 acres of local parks, 287 acres of special use facilities and 772 acres of regional park facilities in the Antioch area. (Refer to Table VI-4.) A summary of existing open space and recreational resource acreage within the Antioch area is provided in Table VI-5.

TABLE VI-4

Existing Public Parks, Special Use Facilities, and
Regional Park Facilities in Antioch AreaPUBLIC PARKS

<u>Name or Location</u>	<u>Acreage</u>	<u>Classification</u>
Jacobson	1.0	Mini
"O" Street	1.0	MinMini
Putnam Street	2.0	Mini
Village East	3.0	Mini
SUBTOTAL	7.0	
Harbour Park	8.0	Neighborhood
Chichibu Park	6.0	Neighborhood
Fairview Park	3.0	Neighborhood
Marchetti Park	5.0	Neighborhood
Tenth Street Park	4.7	Neighborhood
Gentrytown (undeveloped)	10.9	Neighborhood
Mira Vista (undeveloped)	4.9	Neighborhood
Mountaire Meadows Park	6.0	Neighborhood
Christopher Ct. and Contra Costa Canal	3.0	
SUBTOTAL	51.5	
TOTAL PARK ACREAGE	58.5	

SPECIAL USE FACILITIES

<u>Name</u>	<u>Acreage</u>	<u>Classification</u>
County Fairgrounds	75	Community and Regional Events
Memorial Field	10	Youth Athletics
Municipal Golf Course	202	Public Golf Activity
Boat Ramp Club House	-	Group Meetings, etc.
Municipal Boat Ramp and Pier	-	Boat Launching, Scenic Views
Senior Citizens Center	-	Senior Citizens Activities
Municipal Fishing Pier	-	Recreational Fishing
TOTAL	287	

REGIONAL FACILITIES

Contra Loma Regional Park	772	Picnicking, Fishing Hiking, etc.
---------------------------	-----	-------------------------------------

SOURCE: 1973 Public Park and Special Use Facility Inventory
by Lampman and Associates.

LEGEND

- BICYCLE
- - - - - BICYCLE AND PEDESTRIAN
- + - + - EQUESTRIAN AND PEDESTRIAN



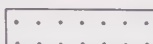
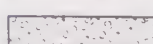
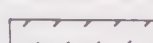
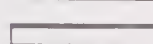
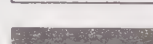
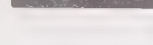
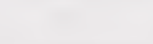

LAMPMAN & ASSOCIATES
0 2400 4800 7200 9600
SCALE FEET



TRAILS

FIGURE VI - 8

LEGEND

-  NEIGHBORHOOD PARK
-  MINI PARK
-  REGIONAL PARK
-  SPECIAL USE FACILITY
-  AGRICULTURAL PRESERVE
-  MAJOR OPEN SPACE AREA TO 1990 AS ADOPTED BY CONTRA COSTA COUNTY GENERAL PLAN
-  COUNTY OPEN SPACE RESERVE
-  SCHOOLS
-  MAJOR UTILITY EASEMENTS
-  CONTRA COSTA CANAL



EXISTING OPEN SPACE AND RECREATIONAL RESOURCES

FIGURE VI - 9



TABLE VI-5

Summary of Existing Open Space
And Recreational Resources

Public Parks	60.4
Special Use Facilities	287.0
Regional Facilities	772.0
Public Schools	69.2
Utility Easements	172.7
Water Resources	54.0
Public Vacant Land	96.7
Private Vacant Land (within city limits)	<u>1,552.1</u>
	3,043.5

Source: Open Space Element, W.I.C.H.E. Report, September 1972
Land Use Analysis Report, Lampman and Associates,
February, 1973.

a. Local Parks

Antioch currently has four City-owned mini-parks ranging in size from 1.0 acre to 3.0 areas and nine neighborhood parks ranging from 3.0 acres to 10.9 acres. Three of the City's neighborhood park sites, i.e., Gentrytown, Harbour Park, Mountaire Meadows, Contra Costa Canal Park and Mira Vista are currently undeveloped.

b. Schools

Cooperation between City schools and parks is both an advantage and an economic necessity. Because of the position of most schools throughout the community, these facilities are most closely related to the existing population of children, the largest park user group. It is only natural and desirable that parks, recreation and schools should pool their resources for the purpose of assisting each other in providing recreation services for the citizens of the community.

Foresight and cooperation in Antioch over the years have produced a broad range of recreation programs and the coordinated construction, maintenance and use of both school and park facilities throughout the City. Currently, there are approximately 70 acres of open space and recreational facilities associated with the public schools in Antioch (Refer to Table VI-6).

c. Special Use Facilities

Approximately 287 acres of land in the Antioch area are currently dedicated to special use facilities. They include: Memorial Field, municipal golf course, municipal boat ramp and club house, and the Contra Costa County Fairgrounds. (Refer to Table XIII for the acreage distribution of each facility)

TABLE VI-6

Open Space and Recreational Facilities
Associated with Public Schools, Ease-
ments, and Reservoirs in the Antioch Area

<u>Name</u>	<u>Open Space Area</u>	<u>Classification</u>
<u>PUBLIC SCHOOLS</u>		
Bidwell	6.8 acres	Elementary
Belshaw	4.6 acres	Elementary
Kimball	5.7 acres	Elementary
Marsh	4.6 acres	Elementary
Mission	3.0 acres	Elementary
Sutter	8.7 acres	Elementary
Turner	4.4 acres	Elementary
Fremont	2.5 acres	Elementary
Park	11.0 acres	Intermediate
Antioch	5.6 acres	Intermediate
Antioch	12.3 acres	Senior High
	69.2 acres	

UTILITY EASEMENTS

<u>Type</u>	<u>Width (feet)</u>	<u>Acreage</u>
EBMUD	100	42.7
P.G. & E. North	100	42.0
P.G. & E. South	80	24.8
Standard Oil	25	4.8
SP Gas Line	30	4.1
Contra Costa Canal	variable	54.3
Total		172.7 acres

WATER RESERVOIRS

City Reservoir	54.0 acres
Contra Loma Reservoir	(listed previously as part of the regional park)

Source: 1972 Open Space Element Report by W.I.C.H.E.
1973 Community Facilities Report by Lampman & Associates

d. Regional Parks

Contra Loma Regional Park is currently available to the residents of Antioch. Located just south of Contra Costa Canal and west of Lone Tree Way this regional park offers about 772 acres of land for picnicking, boating, fishing and swimming. The park is also important for its groundwater recharge and reforestation capabilities, as well as recreation.

e. Private/Commercial Recreation

A substantial portion of the total demand for recreation is accommodated by the private sector. Owned and operated by private concerns, the prerequisite for use of these facilities is usually membership in an organization or a fee or, in some cases, both.

Included in this category are youth and health clubs, bowling lanes, billiard parlors, private golf courses and marinas, boat clubs and other recreation associated with membership or fee-type operation.

J. ERME STANDARDS AND CRITERIA

In general the designation of open space conservation and recreational spaces, and the determination of environmental resource management practices are dependent on an area's natural resources and physiographic features, the location of urban development, consistency with Environmental Resource Management goals, some recreation demand data, and the type of environment which citizens desire and are willing to achieve.

In formulating standards and criteria for the Environmental Resource Management Element, it should be acknowledged that any decision will be somewhat arbitrary, for it must of

necessity rest on the values, goals and objectives which citizens regard as salient to their environment.

1. Open Space and Recreation

There are many different types of open space areas which can be part of a balanced system of park and recreational facilities. Local parks are commonly defined as open space areas set aside for active and passive recreational uses by persons of all ages. Regional park facilities provide large scale open space areas for a variety of regional recreational activities. Additionally, special use facilities are important to a well balanced park and recreational system, even though they provide a limited variety of recreational activities. Parkways, linear parks and scenic highway corridors also provide special elongated greenbelt open space areas for visual and aesthetic pleasure as well as for selected recreational activities. In order to plan for a balanced park and recreational system which offers a variety of open space areas throughout the community, planning standards and criteria need to be identified so as to guide future park acquisition and development decisions.

The following standards and criteria are consistent with the previously stated goals and objectives of the Environmental Resource Management Element. They are based upon recommendations of the National Recreation and Park Association and the League of California Cities.

a. Playlots

The playlot is a small area intended for children up to 6 to 7 years of age. It is essentially a substitute for the backyard and thus normally provided only in high-density residential areas. Playlots are expensive to maintain and difficult to administer but serve an important function especially in inner city areas. They range in size from 2,500 square feet up to one acre and usually feature play apparatus, a paved area for wheeled toys, benches, sand areas, a small wading or spray pool, and landscape treatment. They should be located within a block

or superblock or near the center of a housing development. Children should not be required to cross a major arterial street to reach the playlot. Antioch does not have any public "playlots"; however, such facilities could be very desirable for high density areas such as apartments.

b. Mini or Vest Pocket Parks

There has been great emphasis of late on mini parks, which are usually vacant lots combined and converted to recreation use. Mini parks may serve children only, senior citizens only, or any age group, depending on the needs in the neighborhood. The size and location is determined more by the availability of vacant land than any other factor. Mini parks may feature children's play areas, quiet game areas, landscaping, and some sports activities such as multi-purpose courts if space allows. The typical size of a mini park is one to three acres.

The mini park offers other valuable effects. By using vacant lots and removing dilapidated structures, the mini park can remove existing and potential eyesores and hazards from the City. Additional visual quality can be afforded by both breaks in the continuous structure of residential areas and bright focal points of activity--particularly if the neighborhood is somewhat dilapidated. In cities where mini parks have been developed and maintained by neighborhood groups, there is evidence that they have helped stimulate a greater sense of civic pride and greater respect for other public properties.

These sites are generally the most expensive to acquire, develop, and maintain in comparison with parks of a larger variety. Detail development in small units, plus heavy maintenance due to intensive use, make mini parks expensive. The total cost is usually less, however, since there is less land. But they cannot meet the needs of an entire neighborhood. Antioch currently has four mini parks which are serving the needs of sections of the community.

c. Neighborhood Parks

Neighborhood parks are designed to provide recreation and open space facilities for residential neighborhoods. These parks should be within 1/2 mile of all homes in the neighborhood and easily accessible. The neighborhood park should provide facilities for the entire family and can range in size from three to fifteen acres dependent upon the total population to be served and availability of an adequate park site. Neighborhood parks seldom if ever include specialized amenities such as swimming pools, gymnasiums, etc. which would attract participation from outside the immediate neighborhood. The extent of amenities for neighborhood parks also has a direct bearing on the size and character of the neighborhood park. The amenities recommended by national standards are intended to provide a park which will have an adequate scope of facilities to provide for recreation interests. Typical amenities include:

- Children's creative play area
- Group picnic area
- Multiple use game courts
- Lighting for night use and protection
- Off-street parking as necessary
- Special court areas
- Open turf areas
- Individual picnic sites
- Small wading or spray pool
- Restroom, storage, and recreation office buildings

As indicated, a recreation area of less than three acres in size is typically classified as a mini park, vest-pocket park, strip park, or parkette. These parks are sometimes mistakenly referred to as a

neighborhood park. The recommended national standard for neighborhood parks is 2.5 acres per 1,000 residents with a desirable size being five to twenty acres (refer to Figure VI-10). Antioch currently has seven neighborhood parks which provide the majority of family recreational facilities.

d. Community Parks

While the neighborhood park should be designed to attract and serve a particular neighborhood population, there are certain recreation facilities which require more space and attract large numbers of people which would be disturbing to the residential neighborhood. The community park should be a minimum of fifteen acres and usually attracts bike-to and drive-to clientele in contrast to the walk-to characteristics of neighborhood park clientele. The typical facilities within a community park include athletic courts and fields, swimming and wading pools, recreation centers, off-street parking, group picnic areas and night lighting. Parks of this type are best located near thoroughfares, easily accessible and distributed so they are within a one-half to three mile distance of each home. The well-planned community park tends to be the center for many community events and teenage activities (refer to Figure VI-11). Antioch does not have a community park but is in need of such a facility.

e. Regional Parks

Such parks are normally acquired to provide the urban dweller with an opportunity to get away from the noise and congestion of the city without having to travel a great distance. A central location is desirable but not always possible and the regional park is often located near or outside the City limits.

A minimum of 50 acres is required with 250 to 500 acres being more desirable. This park may feature wooded areas, varying topography and water features, picnic areas, boating and swimming, a nature center, nature, hiking and riding trails, day camps, and some sports

SPACE STANDARDS FOR NEIGHBORHOOD PARKS

Suggested space standards for various units within a typical park.

FACILITY OR UNITS	PARK ADJOINING SCHOOL	SEPARATE PARK
Play apparatus area — pre-school	.25	.25
Play apparatus area — older children	.25	.25
Paved multi-purpose courts	.50	.50
Recreation center building	*	.25
Sports fields	*	5.00
Senior citizens' area	.50	.50
Quiet areas & outdoor classroom	1.00	1.00
Open or "free play" area	.50	.50
Family picnic area	1.00	1.00
Off-street parking	*	2.30**
Subtotal	4.00	11.55
Landscaping (buffer & special areas)	2.50	3.00
Undesignated space (10%)	.65	1.45
TOTAL	7.15 acres	16.00 acres

*Provided by elementary school

**Based on 25 cars @ 400 sq. ft. per car

FIGURE VI - 10

SPACE STANDARDS FOR COMMUNITY PARKS

Suggested space requirements for various units within the park.

FACILITY OR UNITS	PARK ADJOINING SCHOOL	SEPARATE PARK
Play apparatus area, pre-school	.35	.35
Play apparatus, older children	.35	35
Paved multi-purpose courts	1.25	1.75
Tennis complex	1.00	1 00
Recreation center building	.	1.00
Sports fields	1.00	10.00
Senior citizens' complex	1 90	1 90
Open or "free play" area	2 00	2 00
Archery range	75	75
Swimming pool	1 00	1 00
Outdoor theater	50	50
Ice rink (artificial)	1 00	1 00
Family picnic area	2 00	2.00
Outdoor classroom area	1 00	1 00
Golf practice hole	.	75
Off-street parking	1 50	3 00**
Subtotal	15 60	28 35
Landscaping (buffer & special areas)	3 00	6 00
Undesignated space (10%)	1 86	3.43
TOTAL	20.46 acres	37.78 acres

*Provided by Jr. or Sr. High School

**Based on 330 cars @ 400 sq. ft. per car

FIGURE VI - 11

facilities on a less formal basis than the community park. Regional parks may be left primarily in their "natural state" while others may have natural and developed areas such as the Contra Loma Regional Park.

The large urban park usually serves those within a 30-minute drive, which may be 50,000 to 100,000 people. The responsibility for providing these extra-urban parks generally falls upon the county or a regional authority. They should not, under any circumstances, take the place of neighborhood or community parks. The recommended standard for a regional park is five acres per 1,000 and a minimum size of 50 acres. It is the responsibility of the East Bay Regional Park District to provide regional park facilities in the Antioch area. The 772 acre Contra Loma Regional Park currently provides adequate facilities for residents of Antioch and Eastern Contra Costa County.

f. Special Use Facility

This is a park-like area or special facility where a limited variety of activities can take place, and for safety or physical reasons, must be distinctly separate. Special use facilities may include swimming pools, gymnasiums, athletic fields, golf courses, skate rinks, recreation center buildings, boat launching facilities and marinas, and areas of unique interest (refer to Figure VI-12). Existing special use facilities in the Antioch area include: Memorial Field, Municipal Golf Course, Municipal Boat Ramp and Club House.

g. Parkways or Linear Parks

These are essentially elongated parks with a path meandering throughout the length. The parkway generally serves to connect large units in the park system or to provide an area for hike, equestrian or bike trails along a scenic way. The parkway usually follows natural features such as streams, shorelines, or wooded areas. Where this kind of resource does not exist naturally, utility easements or other linear lands can be designed and landscaped to provide for a parkway effect. As landscape easements

STANDARDS FOR SPECIAL USE FACILITIES

The following standards are recommended for individual recreation facilities:

Facility (outdoor)	Standard/ 1000 people	Comment
Baseball Diamonds	1 per 6,000	Regulation 90'
Softball Diamonds (and/or youth diamonds)	1 per 3,000	
Tennis Courts	1 per 2,000	(Best in battery of 4)
Basketball Courts	1 per 500	
Swimming Pools—25 yard	1 per 10,000	Based on 15 sq. ft. of water for 3% of population.
Swimming Pools—50 meter	1 per 20,000	
Skating Rinks (artificial)	1 per 30,000	
Neighborhood Centers	1 per 10,000	
Community Centers	1 per 25,000	
Outdoor Theaters (non-commercial)	1 per 20,000	
Shooting Ranges	1 per 50,000	Complete complex incl. high power, small bore, trap and skeet, field archery, etc.
Golf Courses (18 hole)	1 per 25,000	

Most of the above mentioned facilities are desirable in small communities, even though their population may actually be less than the standard.

FIGURE VI - 12

offering opportunities for trails, etc., the parkway can be an effective buffer between noncompatible land uses. Although no specific acreage standard is applicable, a minimum right-of-way of 300 feet is suggested by national standards. The size and shape of the parkway depends primarily on the natural features, availability of the land, and requirements of adjacent land uses.

2. Recreational Space Needs

The best known method for determining the overall recreation space needed within the community is based upon a population-ratio formula. It is generally accepted that there exists a direct relationship between the population and the recreation space needs of that population. A realistic approach has been taken regarding the population-ratio method of determining recreation space needs in the Antioch area. The National Recreation and Park Association recommends ten developed park acres per one thousand persons. The League of California Cities recommends five acres per one thousand persons and the County of Contra Costa recommends four acres of developed local park land for each one thousand persons.

It is believed that the extensive amount of open space recreation opportunity afforded by the Contra Loma Regional Park and the San Joaquin River justify a park land-population formula somewhat less than the county standard. Therefore, it is recommended that the City of Antioch establish a park planning goal of providing three (3) acres of local park land for each one thousand persons. Local parks in this particular case would include community, neighborhood and mini parks. This goal or standard, represents a significant increase over the existing ratio of 1.34 acres of park land per each one thousand residents. The implementation of this goal should be more important than the goal itself, and a three acre per one thousand standard is more realistic in light of inflationary cost of acquisition, development, supervision and long term maintenance of park lands.

K. AN ORDINANCE TO PROMOTE BETTER ENVIRONMENTAL PROTECTION
AND CONSERVATION

At present, there are few ordinances that comprehensively assign importance to environmental considerations as part of the development process. The City should develop an Environmental Resource Management Zoning Ordinance which would include environmental protection measures to implement the open space and conservation provisions of the General Plan. This ordinance will focus on insuring the protection of environmental health and public safety rather than land use. The Environmental Resource Management Ordinance should consist of (1) a series of detailed parcel maps delineating each category of "open space or conservation" resource and (2) a combination of use restrictions and performance standards appropriate to each category identified. The parcel maps should then be overlaid. Any particular parcel of property could be identified in several sub "resource management districts" and would be subject to the standards applicable to each overlay. Regulatory codes of the Environmental Resource Management Ordinance would include but not be limited to the following environmental components:

- ° Agricultural Resources
- ° Water Resources
- ° Hazardous Land Resources
- ° Mineral Resources
- ° Vegetation and Wildlife Resources
- ° Historical, Cultural and Archaeological Resources
- ° Open Space and Recreational Resources
- ° Scenic Features and Routes

L. FEATURES OF ERME OPEN SPACE AND CONSERVATION PLAN

The concept for the ERME Open Space and Conservation Plan is based on the protection, preservation and management of key natural features and environmental resources in the Antioch area. The plan delineates a usable system of parks and recreational spaces within the community and identifies lands within

the planning area in need of conservation treatment. Major open spaces within the community are preserved in a natural state to serve both the recreation and conservation needs of the community. Care is taken to realistically work within the framework of policies set by other elements of the General Plan. Features of the ERME Open Space and Conservation Plan are described as follows and are exhibited in Figures VI-13 and VI-14.

1. Environmental Protection and Conservation

The major portion of the lands designated for environmental protection and conservation are located in the central, eastern and southern portions of the planning area. They include areas adjacent to the San Joaquin River, West and East Antioch Creek and Markley Creek. Primary resource areas are involved, including prime soils, marshes, grasslands and woodlands. As previously explained in the Environmental Resource Inventory, each of these land types play a role in the ecological balance of the planning area and provides a habitat for many types of flora and fauna. Contra Costa County has designated a large portion of the unincorporated territory as open space resources and agricultural preserves. The man-related uses imposed on these lands should be restricted to prevent any adverse impacts to the natural environment.

The planning area also possesses valuable sand, gravel, petroleum and natural gas deposits worthy of adequate conservation-protection measures. In most cases the regulation and enforcement of operational provisions related to these resources lies with the County.

The ERME Open Space and Conservation plan designates the land south and east of the Antioch urbanization line to be maintained in a natural state. The City of Antioch should assist the County in developing a Resource Management Zoning District for the unincorporated territory extending beyond the Antioch urbanization line. Use of lands within the Resource Management Zoning District should be limited to regional recreation, mineral extraction, agricultural production, and agricultural related uses. Land possessing significant environmental features and natural resources within the jurisdiction of the City

of Antioch would be limited to public recreation, open space preservation and natural resource conservation, governed by the proposed Environmental Resource Management Ordinance.

2. Public Recreation and Open Space

The open spaces reserved for recreation purposes in the planning area and the City have been categorized into basic uses as displayed on ERME Open Space Conservation Plan. The following total amounts of land have been reserved.

°	Public Parks	134.8 acres
°	Special Use Facility	373.0 acres
°	Regional Facilities	3,375.0 acres
°	Public Schools	140.0 acres
°	Utility Easements	172.7 acres
°	Water Reservoir	54.0 acres
°°	Scenic Corridors (34.2 miles)	1,244.0 acres

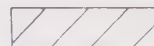
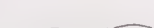
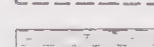
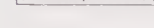
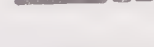
In addition to supporting environmental protection and conservation measures the ERME plan sets forth an organized system of public parks and recreational facilities to be enjoyed by the residents of Antioch. The plan delineates a total of seven miniparks, sixteen neighborhood parks and seven special use facilities.

In most instances the parks are located in areas immediately adjacent to proposed school facilities which will best serve the users. Several of the parks are located in connection with existing utility easements, natural drainage courses, and topographical features. Consequently, the sites also have the benefit of significant involvement with the proposed trail system and their respective greenbelt linkages.

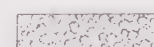
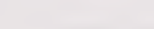
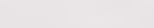
The major recreation proposal in the special use facility category includes an 84 acre multipurpose sand dune water-front park along the San Joaquin River just east of Antioch.

LEGEND

CONSERVATION

-  GRASSLAND
-  WOODLAND
-  CLASS II SOILS
-  CLASS III SOILS
-  CLASS IV SOILS
-  CLASS VI SOILS
-  AGRICULTURAL PRESERVES
-  CREEKS
-  WATERSHED AREAS
-  FLOOD PLAINS
-  STEEP LANDS (25% SLOPE OR GREATER)
-  FAULT LINES
-  RIPARIAN HABITAT
-  MINERAL RESOURCES

OPEN SPACE & RECREATION

-  SCENIC VIEWS
-  GREENBELT, WATERCOURSE, LINKAGE
-  PUBLIC PARKS & SPECIAL USE FACILITIES
-  EXISTING SCENIC HIGHWAY
-  PROPOSED SCENIC HIGHWAY



ERME - OPEN SPACE - CONSERVATION PLAN

FIGURE VI - 13



LEGEND

RESOURCE MANAGEMENT

AGRICULTURE

RECREATION & OPEN SPACE

- MP MINI PARK
- NP NEIGHBORHOOD PARK
- RP REGIONAL PARK
- SUF SPECIAL USE FACILITY

- WATER
- OPEN SPACE

SCHOOLS

- | EXISTING | | PROPOSED |
|----------|-----------------------|----------|
| E | ELEMENTARY SCHOOL | E |
| J | JUNIOR HIGH SCHOOL | J |
| S | SENIOR HIGH SCHOOL | S |
| JC | JUNIOR COLLEGE | |
| A | ADMINISTRATION OFFICE | |



OPEN SPACE PLAN

FIGURE VI - 14



The sand dunes is an area of important biological significance and a portion of the proposed facility will be preserved in its natural state for nature study. The facility will also contain a passive as well as active recreational area, overnight camping facilities including an area for campers and trailers, boat docking facilities, a beach area, boat launching facilities, a mini-motorbike obstacle course and, finally, commercial uses that will be oriented to serve the various activities that are proposed for the waterfront park.

In addition to its expanding public park system and special use facilities, the City of Antioch is fortunate to have one of the largest regional park facilities in eastern Contra Costa County at its backdoor. Contra Loma Regional Park is owned and operated by the East Bay Regional Park District and provides a variety of recreational opportunities to the entire Delta area including picnicking, boating, swimming, hiking and fishing. Regional park facilities in the planning area are further complimented by the district's recent acquisition of some 2,603 acres of land for the Black Diamond Mines Park. This facility encompasses the area south of the existing Contra Loma Regional Park and extends in a southeasterly direction into the historical coal mining areas of Stewartsville, Nortonville, and Somersville. Ultimately, the Black Diamond Mines Park will be utilized for unstructured activities which emphasize its historical significance. Pedestrian access to these two regional park facilities will be strengthened by the County's comprehensive trail system.

3. Scenic Routes

Under the State Scenic Highways Program, it is possible to have county roads, other than state highways, designated as "County Scenic Highways" by the State Director of Public Works. Other highways and roads in the Antioch area in addition to State Freeway Route 4 which possess visual qualities as potential scenic routes include:

- Lone Tree Way
(State Route 4 to Deer Valley Road 2.6 miles)
- Deer Valley Road
(Lone Tree Way to Marsh Creek Road 7.1 miles)
- Somersville Road
(State Route 4 to Black Diamond Way 5.5 miles)

- ° Hillcrest Avenue
(18th Street to Lone Tree Way 3.2 miles)
- ° Paso Corto Road - and proposed extension
(State Route 4 to Hillcrest Avenue 6.8 miles)
- ° Markley Canyon Road
(Paso Corto Road to Nortonville Pass)
- ° 18th Street
(Hillcrest to Bridgehead Road)

Although the ERME Open Space and Conservation Plan recommends the above roads and highways as scenic routes, a full range of tools will be required to adequately implement the scenic route program. The City of Antioch should assist the County in determining route selection and the designation of general standards for these roads and their adjacent corridors. Upon designating the scenic routes and establishing the necessary standards, the City and County should adopt the appropriate legislative controls needed to fulfill the goals and objectives of their particular scenic route program.

Specific implementation plans for protection and enhancing the visual qualities of a scenic route should be developed. This should include setback plan requirements for any anticipated widenings, as well as any other major implementation programs required. The development of landscaping and planting programs of the public right-of-way should be included within this type of implementation plan. Additionally, land should be purchased or easements acquired adjacent to these roadways as soon as funds can be made available.

The Scenic Highways Element will require a synthesis of implementation methods, some of which may require and be eligible for funding from the following primary sources:

- ° Highway Users (Gas Tax) Funds
- ° Federal Aid Secondary Funds

- ° Senate Bill 325 (State Sales Tax) Funds
- ° Federal Grants
 - a. Highway Beautification - Landscaping and Scenic Enhancement (Federal Grants to States)
 - b. Highway Beautification - Control of Junkyards (Federal Grants to States)
 - c. Highway Beautification - Control of Outdoor Advertising (Federal Grants to States)
 - d. Highway Research, Planning, and Construction (Federal Aid Highway Program to States)
- ° Overhead Utility Conversion Funds
- ° Special Assessment District Funds
- ° County General Funds
- ° City General Funds

M. ACTION PROGRAM

Open Space-Conservation

1. Instruct staff to prepare an Environmental Resource Management Ordinance which would consist of a series of detailed parcel maps, use restrictions and performance standards for resource management districts related to all natural resource components, including prime agricultural soils, water resources, hazardous

lands, mineral resources, vegetation and wildlife, historical, cultural and archaeological resources and adoption of such ordinance as the mechanism to implement the ERME Open Space-Conservation Plan.

2. Zone all areas identified as Resource Management to an appropriate classification based on the technical inputs of the General Plan and the provisions of the adopted Environmental Resource Management Ordinance.
3. Require detailed reclamation plans of all future sand and gravel extraction operations. These plans should carry a time limit for phased rehabilitation of all operations.
4. Restrict development in areas possessing valuable mineral resources. Until such time as comprehensive mineral resource data is available for the Antioch area, a mineral and geological statement should be required for all urban development.
5. Continue to require developers to dedicate a reasonable amount of land (i.e., as determined by the provisions of the Environmental Resource Management Ordinance) suitable for permanent open space or provide in lieu fees for the acquisition of property appropriate for open space use and active park use.
6. Continue to require the preparation of Environmental Impact Reports on all public and private projects.
7. Establish a Historical Commission to coordinate with the Historical Society of Contra Costa County and the Society of California Archaeology on matters related to historical, archaeological and cultural resources in the Antioch area. The Commission's duties would include the development of a program plan for the preservation of such sites and implementation of such a plan.

8. In connection with the Environmental Resource Management Ordinance the City should utilize the California Land Conservation Act (i.e., Williamson Act) where possible to preserve prime agricultural lands.
9. Through the enactment of the Environmental Resource Management Ordinance development should be regulated or prohibited in areas in which contamination of watershed lands, water storage areas, or the river water intake line may result.
10. Instruct staff to develop measures in the Environmental Resource Management Ordinance which will discourage the filling of the few remaining marshes in the Antioch area.
11. Instruct the staff to incorporate the specific recommendations of the interim Open Space Element which was prepared by WICHE into the provisions of the Environmental Resource Management Ordinance.

Scenic Highways

1. Initiate steps to jointly pursue with the County of Contra Costa the regulation and development of all scenic corridors and highways which lie in unincorporated areas.
2. Instruct staff to work with Contra Costa County to designate a system of County Scenic Highways in the Antioch area. Request the State to include those highways on the State Scenic Highways Plan with the designation "County Scenic Highways."
3. Instruct staff to develop a priority ranking of all scenic corridors and a phased development program based upon that priority ranking.
4. Instruct staff to identify and map the specific boundaries and rights-of-way of each scenic corridor.

5. Require staff and planning commission review of all land use and development proposals which fall within the corridors of the potential scenic highways identified on the scenic highway plan.

Recreation

1. Adopt as a policy guideline a standard of three acres of local park land for every 1,000 residents.
2. Develop a Master Plan for park and recreational needs which will designate specific locations for park sites throughout the community and determine the method and procedures for acquiring, improving, designing and maintaining such sites.
3. Instruct staff to develop a priority list for trail acquisition and development so that funds may be appropriated for fiscal year 1975-76.
4. Instruct staff to coordinate with the East Bay Regional Park District and Contra Costa County in their planning for regional park facilities and a county-wide trail system, particularly where City input is required.
5. Investigate the feasibility of developing a community park in Antioch which would possess a wide variety of recreational facilities including a recreation center, tennis and athletic courts, picnic areas and night lighting. This facility should be planned in connection with the community's Master Plan of park and recreation needs.

N. IMPLEMENTATION

The following discussion of ERME implementation devices is intended to point out the wide range of possible techniques which can be used by the City of Antioch to manage the open space, conservation, scenic highways and recreational element. For any implementation program to be successful, a combination

of the various techniques must be used as dictated by the type of environmental resource involved and local conditions.

1. Federal Funding Programs

a. Legacy of Parks

Administered by the Department of Housing and Urban Development (HUD), the program was designed to assist local governments in improving the environment and in meeting recreation and open space needs in urban areas. The Legacy of Parks emphasizes small neighborhood parks and places high priority on developing land already in public ownership. The grants provide at least 50 percent of the cost of acquisition and development, and may provide up to 75 percent for sites which are proven to guide and shape sound urban development.

b. Land and Water Conservation Fund Grants

Administered by the Bureau of Outdoor Recreation of the Department of the Interior to provide financial assistance to state and local governments for acquisition and development of recreation areas and facilities to meet current and future needs. Grants may range up to 50 percent.

c. Recreation and Public Purposes Act

Administered by the Bureau of Land Management, Department of the Interior, funds are provided to local agencies for the lease or acquisition of available public land for historical monument, recreation and public purposes.

d. Highway Beautification Act

Administered by the U.S. Department of Transportation for financial assistance to state highway departments to be used for highway landscaping, rest stops, roadside recreation areas, and general scenic enhancement.

Local governments may make application for the funds through the state.

e. Federal Revenue Sharing

Designed to be project oriented the option is left open to local jurisdictions of the use of their Revenue Sharing funds. A legitimate use is for open space acquisition, park development and environmental enhancement.

f. Other Funding Programs

A variety of federal and state matching grants are available for the restoration and maintenance of environmental quality. These include funds from the Environmental Protection Agency for water and waste facilities planning, water reclamation projects; the State Wildlife Restoration Fund, administered by the Department of Fish and Game for acquisition and development of significant wildlife areas.

2. Regulatory Powers

a. Lot Size Requirements

The requirement for large lot size has been widely used in urban areas in an attempt to preserve open space by discouraging development or by so diffusing it as to maintain an open character to the land. However, when used as a tool for open space preservation, care must be taken to require sufficiently large enough parcels. Otherwise, the trend might result in the diffusion of a subdivision with resultant higher and less efficient costs of services.

b. Setbacks

Setback requirements can be used to preserve some minimal privately usable open space in built-up areas, and could be used to provide fire breaks, for scenic purposes, to protect natural water courses along minor streams, and

to require that no structures be built in known fault zones that can be defined in precise terms.

c. Cluster Development

This technique, sometimes referred to as "Planned Community Zoning", establishes a maximum density or number of dwelling units which can be developed in an area, and permits local governments to work with the developer to determine where development should occur and what part of the site should remain as open space. The open space can be privately owned through a dedication to a property owner's association (perhaps with an easement given to the local agency) or open areas can be dedicated in fee to the local jurisdiction, or a combination of both techniques can be used.

3. Acquisition Techniques

a. Fee Simple

The most commonly used method of acquiring land is buying it outright--buying the fee simple. However, sometimes overlooked are methods to purchase land on an installment basis or purchase with leaseback.

Purchase with leaseback is particularly appropriate with regard to farming. Many people desire to continue farming their land. However, increases in water costs, farm labor costs, machinery costs and high land taxes often make farming economically unfeasible. Under a purchase-with-leaseback plan, government buys land and leases it back to the farmer at a modest rate.

Should the City not have the funds to purchase a given piece of property when an opportunity presents itself, an alternative method of purchase might be buying the property on installment. By this method, instead of waiting until the full amount is on hand, the County could enter into an agreement with the owner to purchase the property over a period of years. For example, if a

seller is willing to sell his property, he may elect to accept payment over, say, a ten-year period with installments of 10 percent each year. In return, he could remain on the property for the ten-year period.

b. Easements

Public agencies may elect to acquire just certain rights to property, rather than the fee simple. For example, a property owner may choose to negotiate a scenic or open space easement on a portion of his property. In exchange for agreeing not to develop that portion of the property, the owner receives lower tax assessments.

The authority to negotiate easements for open space use is obtained in two state statutes: the Open Space and Scenic Land Acquisition Act of 1959 and the Open Space Easement Act of 1969.

4. Other Techniques

a. Bonds

People throughout the state have shown increased recent concern for open space and environmental issues, and the voters of many communities have been passing bond issues at general elections.

A State Park bond was passed in June of 1974 providing approximately \$2,442,927 annually to Contra Costa County. The State Resources Agency is currently planning project uses for the 1974 bond funds.

b. Gifts

Beyond charity as a gift to society, incentives can accompany the giving of land. By the principle of "unlimited deduction" an individual may receive more than usual tax credit for donations when the donation

is to a public agency for open space, park or recreation purposes.

Another method to encourage the giving of land is the gift-with-life-tenancy approach. An individual gives his land and retains the right to live on the land. Usually accompanying this right, as an incentive, is a release of the individual from paying taxes on the property.

c. Purchase and Leaseback

This technique allows a local agency to purchase or otherwise acquire title to land and lease it back to the original owners, or other parties, with restrictions allowing only open space uses. This is particularly suitable for areas with productive value, such as agricultural lands.

Revenue bonds could be used to finance the original purchase and could be retired by the lease income received.

d. Purchase and Saleback

This method allows land to be resold for private use subject to a covenant controlling future use of the property. The covenant could be to permit only open space or agriculture.

e. Excess Condemnation

This technique involves the purchase of more land than is actually needed for a specific public project such as a roadway or public building in order to create a buffer. This technique holds particular promise as a means of combining open space preservation with other public uses and achieving economics through a single negotiation and purchase.

f. Advance Purchase

The practice of acquiring land before the actual time of need--advance purchase--is a technique frequently utilized to obtain public facilities sites in order to take advantage of lower land costs before development occurs.

g. User Taxes

Taxes may be applied to such items as sporting goods, recreational vehicles, and even horses, and the resultant revenues used for open space acquisition trail development or provision of recreational facilities.

In summary, any agency will benefit if a great variety of implementation techniques and funding sources are used. A successful Environmental Resource Management program depends upon the use of a variety of sources, ingenuity, and the ability to grasp opportunities as they arise.

VII

**SEISMIC
SAFETY ELEMENT**

A. INTRODUCTION

The City of Antioch is well aware of the potentiality of seismic hazards in the planning area as well as in the San Francisco Bay Area and the State of California.

Numerous earthquakes have occurred in historic time in the planning area, including one in May of 1889 that caused major structural damage in Antioch. In the early 1900's, the City of San Francisco experienced a severe earthquake. The most recent occurrence was in the San Fernando Valley area in 1971 causing widespread damage throughout the greater Los Angeles Metropolitan area.

The public, in general, has become very aware and concerned regarding seismic hazard. As a result, State law now requires that every general plan include a Seismic Safety Element (Government Code Section 65302(f)). It is almost ironic that legislation requiring the Seismic Safety Element was not enacted until after the 1971 San Fernando earthquake. Possibly, that disaster did more than anything else to encourage the legislation. However, the intent of the legislation is to prevent future catastrophes by initiating action now to the end of making safe residential areas and bringing buildings up to earthquake standards.

Specifically, Government Code Section 65302 (f) requires:

"A seismic safety element consisting of an identification and appraisal of seismic hazards such as susceptibility to surface ruptures from faulting, to ground shaking, to ground failures, or to the effects of seismically induced waves such as tsunamis and seiches.

"The seismic safety element shall also include an appraisal of mudslides, landslides, and slope stability as necessary geologic hazards that must be considered simultaneously with other hazards such as possible surface ruptures from faulting, ground shaking, ground failure, and seismically induced waves."

The effect of this law is to require cities and counties to take seismic hazards into account in their planning programs. The intent is to consider all seismic hazards. The basic objectives are to reduce (1) loss of life or injuries, (2) damage to property, and (3) economic and social dislocations resulting from future earthquakes.

Large earthquakes are, at present, unpredictable and, fortunately, infrequent. Therefore, in order to fulfill the threefold basic objective, as stated above, a Seismic Safety Element must identify the risk from earthquakes of each of the above problems and the means of minimizing that risk as much as possible. Thus, over any period of time that these means are applied, the amount of injury, death, damage and disruption will be lessened.

In order to identify and minimize seismic risk to the public, the environmental earth science consulting firm of F. Beach Leighton and Associates was retained to:

1. Provide a detailed identification and appraisal of geologic and seismic conditions pertinent to future planning and development within the City.

2. Establish land use capabilities based on these conditions.
3. Provide guidelines for the City on the type and scope of geotechnical studies necessary for future development within the City.

The study included: (1) a review of pertinent geologic and soil reports and maps, (2) geologic reconnaissance of the area, (3) study of stereo scopic aerial photographs of the area, (4) an in-depth review of the potentially active fault zones and seismic parameters in order to define probabilities of future seismic events, and (5) preparation of the Geotechnical Land Capability Map.

B. GEOLOGY

1. Geologic Setting and Structure

The City of Antioch is located in the eastern portion of Contra Costa County with a backdrop of the Mount Diablo Mountain range to the south and the San Joaquin River to the north.

The planning area bedrock geology is characterized by a series of northward tilted sedimentary formations which are exposed in the foothills and mountains south of the presently developed part of Antioch. These formations range in age from Pliocene (youngest) on the north, to Cretaceous (oldest) on the south. They include, from north to south, the Wolfskill Formation, Lawlor Tuff, Neroly and Cierbo Sandstones, Markley Formation, Domegine Sandstone, Meganos and Martinez Formations, Deer Valley Sandstone, Moreno Formation and Joaquin Ridge Sandstone. The formations are grouped and delineated on the Generalized Geology Map according to their principal rock types.

The major portion of the City itself is covered by sedimentary alluvium transported and deposited by streams. Most of the alluvium represents former sedimentary bedrock formation of the Mount Diablo

foothills. Alluvial sediments combined with gravelly terrace deposits, sand dune deposits, marsh deposits and artificial fill make up the principal formations upon which much of the City lies.

The alluvial sediments have been deposited in a hierarchy ranging from sandstone, siltstone and shale near the foothills to finer grained sand, silts and organic rich soils (peat) on flatter terrain adjacent to the San Joaquin River.

The natural earth materials present in the Antioch area can be divided into four major groups for planning purposes: (1) basement complex, (2) sedimentary rocks, (3) terrace and older alluvial deposits, and (4) recent alluvium. Refer to Figure VII-1 for a complete illustration of geologic formations in the planning area.

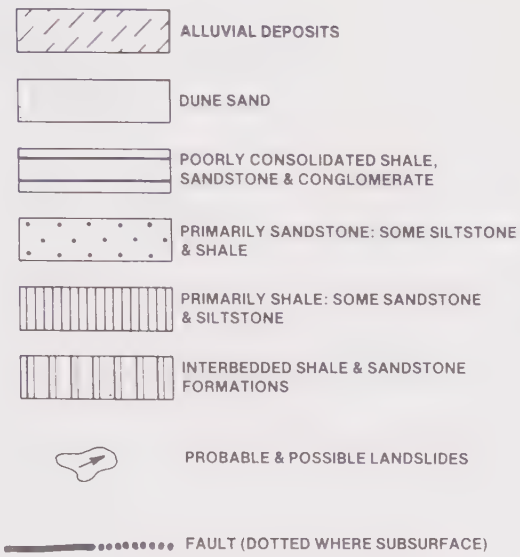
a. Basement Complex

The oldest rocks in the area are of the sedimentary bedrock formations of Cretaceous age. This is also the major rock unit underlying the greater part of the Mount Diablo Mountains. This is normally hard rock and often exposed or very near the surface, especially in the higher and steeper portions of the planning area where slope angles generally range from 4:1 to as steep as 1:1. Several bedrock landslides have occurred in the southwestern portion of the planning area in the steeper hillside areas. A majority of the slides have occurred along the south end of Somersville Road in upper Markley Canyon. Bedrock is normally the most stable formation within the planning area in regard to ground shaking intensities caused by seismic activity.

b. Sedimentary Rocks

These units, consisting mostly of siltstones, shales and sandstone, are exposed primarily in the

LEGEND



GENERALIZED GEOLOGY

FIGURE VII - 1



central and southerly half of the planning area along the hillsides of the Mount Diablo Range. Due primarily to its abundant thin clay beds and seams and to its thin and folded beds, it is probably the least stable of the bedrock units.

c. Terrace and Older Alluvial Deposits

Much of the City of Antioch is built upon these units which constitute an alluvial surface in the valley bottoms below the other bedrock formations. This unit is poorly consolidated sand and gravel with local concentrations of sand and siltstone. It is generally not stable in steep slopes and is perhaps the most problematic unit with regard to determining an anticipated ground response to seismic shaking.

d. Recent Alluvium

Significant areas of recent alluvium are limited to the present flood plain of the San Joaquin River and its major tributaries, i.e., Markley Creek, East and West Antioch Creek. This alluvium is predominantly coarse sand and gravel deposited by these creeks during high water. Stability is about the same as the older alluvium; however, shallow groundwater and the likelihood of floods during heavy precipitation may be significant factors.

2. Faults

Major known faults trend mainly north-south, or northeast-southwest. Refer to Figure VII-1. With the exception of the suspected "Antioch Fault," the major faults have not been considered active. The greatest number of faults affect the older bedrock in the steeper terrain in the southwest portion of the planning area. Other regionally important faults and seismicity are discussed under Seismic Analysis.

According to a recent study by the United States Geological Survey, a number of surface disturbances including distorted railroad sidings, fractures with right-lateral offsets and compressional buckles in walks and curbs in Antioch are coincidental with the projected trace of the Antioch Fault and supply the most compelling evidence for recent movement on the fault. This suspected fault trends southeasterly from the north-central portion of the City and apparently joins the Davis Fault south of Lone Tree Valley. No apparent movement has been reported along the Davis Fault during historic times. Additional evidence supporting recent fault creep and movement along the Antioch Fault includes bulged linings on both sides of the Contra Costa Canal, distortions in sidings of the Atchison-Topeka and Santa Fe Railroad in northwest Antioch and structural problems in the cafeteria of the John Fremont Elementary School. Refer to the Seismic Analysis Map (Figure VII-2) prepared by United States Geological Survey showing evidence for recent fault activity in the vicinity of Antioch.

Chapter 7.5, Division 2 of the Public Resources Code of the California State Government Code (Alquist-Priolo Geologic Hazards Zones Act) provides the State Geologist and State Mining and Geology Board prepare maps of special studies zones of earthquake faults constituting potential hazards to structures from surface faulting or fault creep. Once official maps have been prepared by the State for local agencies, the responsibility for implementation of this Geologic Hazards Zones Act rests with the local jurisdiction. The suspected "Antioch Fault" was not included in the initial preliminary special studies zones prepared by the State Geologist as it was neither listed in the Act nor deemed sufficiently active and well defined to constitute a potential hazard based on existing data. The Act, however, permits revision or delineation of new special studies zones when warranted by new information. It should be requested of the State Geologist and State Mining and Geology Board that a review of USGS information and investigations as necessary be conducted to determine if the "Antioch Fault" should be included within such a special studies zones under the provisions of Chapter 7.5, Division 2, of the Public Resources Code.

EXPLANATION

Qys	QUATERNARY
Qos	
Ti	
Tne	
Tc	
Tmk	
Tnv	
Td	
Tme	

NOTES TO ACCOMPANY NUMBERED MAP LOCALITIES

1. The map shows the distribution of Quaternary deposits and the effects of recent tectonic movement. The city of Antioch is located in the center of the map. The Davis Fault is shown as a dashed line with arrows indicating the direction of fault offsets. The Lone Tree Valley is shown as a stippled area. The map is based on the U.S. Geological Survey map of 1:24,000 scale, Antioch North, Antioch South, 1953. The map was photorevised in 1966.

2. The map shows the distribution of Quaternary deposits and the effects of recent tectonic movement. The city of Antioch is located in the center of the map. The Davis Fault is shown as a dashed line with arrows indicating the direction of fault offsets. The Lone Tree Valley is shown as a stippled area. The map is based on the U.S. Geological Survey map of 1:24,000 scale, Antioch North, Antioch South, 1953. The map was photorevised in 1966.

3. The map shows the distribution of Quaternary deposits and the effects of recent tectonic movement. The city of Antioch is located in the center of the map. The Davis Fault is shown as a dashed line with arrows indicating the direction of fault offsets. The Lone Tree Valley is shown as a stippled area. The map is based on the U.S. Geological Survey map of 1:24,000 scale, Antioch North, Antioch South, 1953. The map was photorevised in 1966.

4. The map shows the distribution of Quaternary deposits and the effects of recent tectonic movement. The city of Antioch is located in the center of the map. The Davis Fault is shown as a dashed line with arrows indicating the direction of fault offsets. The Lone Tree Valley is shown as a stippled area. The map is based on the U.S. Geological Survey map of 1:24,000 scale, Antioch North, Antioch South, 1953. The map was photorevised in 1966.

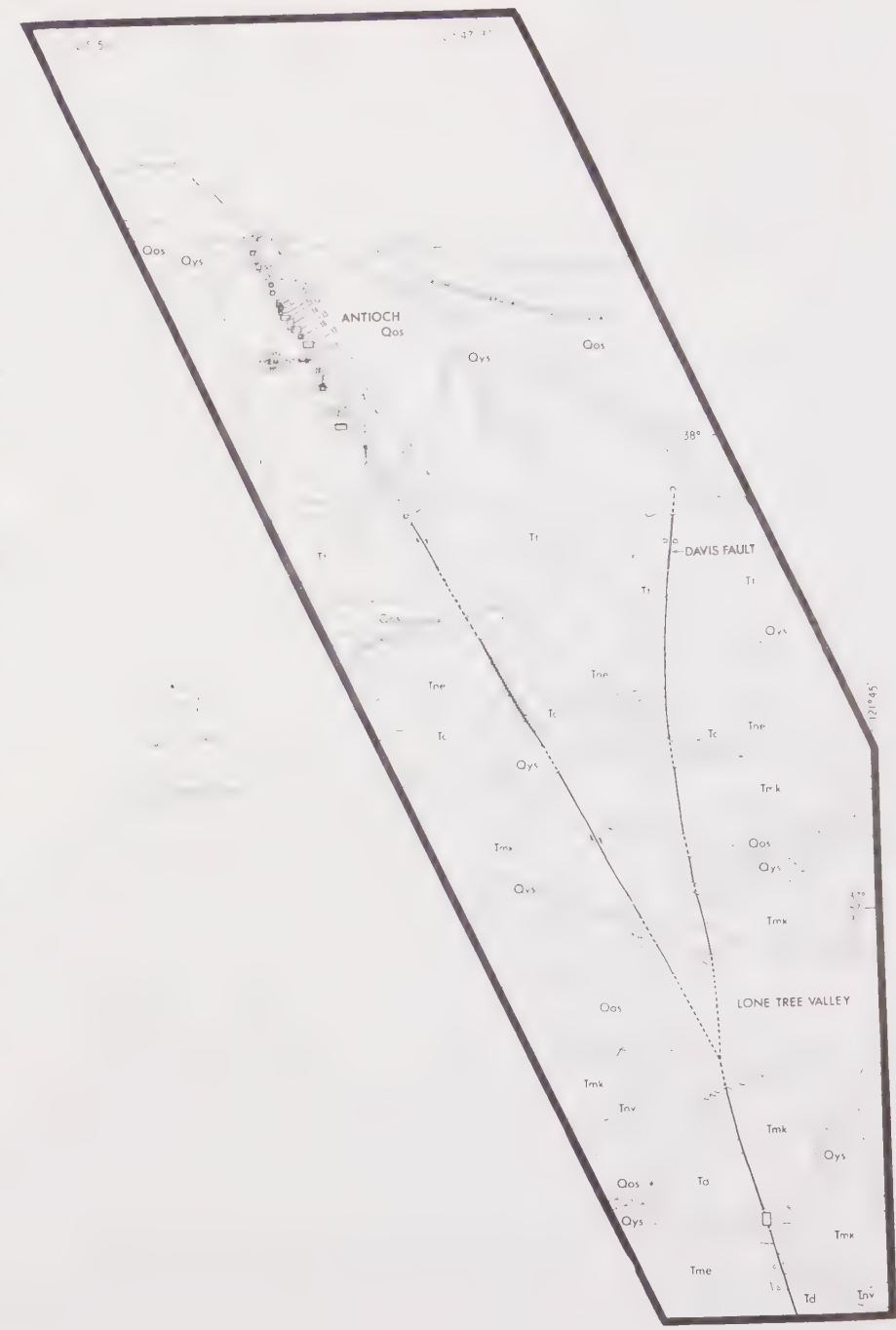
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FAULT: Dashed where effect on Quaternary deposits unknown. Letters (U-up; D-down) and arrows show principal directions of fault offsets. Hachure pattern represents zone of calcite-cemented fault breccia. Stipple pattern represents zone of anomalous features in the city of Antioch that seemingly result from recent fault creep.

23
STRIKE AND DIP OF BEDS

Quaternary deposits and surface effects of recent tectonic movement mapped by D. E. Burke and E. J. Helley, 1973. Bedrock geology in part enlarged and somewhat modified from Brabb and others (1971).

Base from U. S. Geological Survey, 1:24,000 Antioch North, Antioch South, 1953. Photorevised 1966.



RECENT SEISMIC ANALYSIS

FIGURE VII - 2

3. Groundwater

Available groundwater data indicate that existing water wells, located primarily in the area between Oakley Road and 18th Street in the central and east portion of Antioch, have water levels ranging from about 28 to 64 feet below ground surface. The groundwater is apparently developed from the recent and older alluvium which merge laterally, toward the northeast, into the Sacramento-San Joaquin Delta Deposits, the principal water-bearing unit of the region. A groundwater contour map (1956) indicates that the base of the fresh water zone ranged in elevation in the Antioch area from about -100 to -250 feet (below sea level). Gradual depletion of the fresh groundwater resources, however, has resulted in a progressive quality degradation due to salinity intrusion in the Delta region.

Although no water quality data were obtained for the wells in the Antioch area, published reports show that water quality in the Delta region, however, has historically ranged up to excellent in the areas surrounding the Delta area, particularly where they penetrate older formations. Since the existing wells in the Antioch area have been used primarily for irrigation and limited domestic purposes, the demand on the groundwater resources (and therefore the water levels) has probably remained relatively constant. Nearly all municipal water is derived from surface sources conveyed via the Contra Costa Canal from the Sacramento-San Joaquin Rivers system.

4. Soils

Near-surface soil types, developed on alluvial and bedrock areas, vary widely in composition and engineering properties. Results of mapping and classification of the soil types in the Antioch area are contained in a U. S. Department of Agriculture, Soil Conservation Service publication, "General Soil Survey and Report for Contra Costa County," revised January, 1968. This report, as well as private consultant soils engineering reports on file at the City of Antioch, reveal that the

area soils range between nonexpansive to highly expansive.

Soft and highly compressible organic-rich soils (peat) are known to underlie the low, marshy areas bordering the San Joaquin River.

C. ENGINEERING GEOLOGY

1. Landslides and Slope Stability

Significantly large, landslide-affected slopes are present mainly beyond the present city limits, but within the hillier west portion of the planning area. As can be noted on the Generalized Geology Map, most of the slides are along the south end of Somersville Road, in upper Markley Canyon. Many are related to adverse bedding planes on north-facing slopes; others result from oversteepened topography or particularly weak bedrock or soil materials.

Although the full extent and nature of landsliding requires further detailed study and analysis, it is evident at this planning stage that the development of much of the steeper slide-affected terrain would be seriously hampered by the significant cost of corrective grading required, or by the loss of usable acreage if left natural.

Because of the relatively consistent northward bedding inclinations, north-facing natural or future cut slopes will be of particular concern in the evaluation of slope stability. Within the various formations, the degree of susceptibility to bedding-plane sliding will generally range from greatest in the predominantly shale bedrock to least in the sandstone bedrock.

2. Flooding and Flood Control

In the recent past, the best documented occurrence of flooding appears to have been the flood of February,

1958. Heavy rains during a two-day period caused the lower portions of East and West Antioch Creek to overtop their banks and inundated many low-lying areas. Flows which exceeded culvert capacities resulted in localized flooding at various locations. Although some channel improvements have been made and protective levees have been built in the northwest portion of Antioch, apparently no comprehensive study of the flood control needs of the City have been made public to date.

3. Subsidence

Land subsidence, resulting either from fluid withdrawal or natural compaction of soft or highly organic sediments, does not appear to be a significant hazard in most of the planning area. Subsidence of peat-rich Delta deposits northeast of Antioch, however, is known to have occurred in the past due to surface wastage (oxidation by exposure to air, burning of peat soils to destroy weeds and plant pests and wind erosion). Peat deposits are known to be present within the northeastern most edge of the zone on the Geotechnical Land Capability Map designated by the symbol 1AY. It is also possible that some peat material or similar soft sediments underlies the adjoining zone designated 1AD. Although these areas would be most susceptible to possible future subsidence, there apparently is no data confirming past subsidence of these areas within the City.

Increased heavy withdrawal of groundwater or extensive oil and gas production from the Brentwood field (in the Lone Tree Valley area) could result in measurable subsidence in the future; however, the likelihood appears relatively remote at present. Future monitoring on an annual basis of these areas and continued awareness of a subsidence potential, nevertheless, is advisable.

D. SEISMIC ANALYSIS

1. Active Faulting

Although movement is suspected to have occurred on the Antioch Fault, no active faults have been definitely

confirmed to be present within the existing limits of the City of Antioch or the planning area located generally to the south. Recent investigations by an United States Geological Survey team have, however, provided sufficient evidence for recent fault activity along the Antioch Fault. (Refer to Figure VII-2.) Furthermore, earthquake epicenters of Richter magnitudes of 4.0 or less, and as great as 4.9 (September, 1965) have been recorded in the west Antioch area since 1932, and may be related to the Antioch Fault. Seismological analysis of the 1965 earthquake sequence points to the possibility that the earthquake activity was related to movement along a north-south trending subsurface fault.

2. Ground Shaking

Ground shaking expected in the future in the Antioch area is based on an analysis of fault movements expected during the next 50 years along the several known active faults located to the west of Antioch. The critical parameters relevant to this analysis and the approximate probability of occurrence for events from each of these faults are shown in Table VII-1. While data are not sufficient to statistically derive precise probabilities of occurrence for these events, the generalized ranges shown in the table are estimated to have the following numerical ranges: Likely greater than 50%; Intermediate - 50-15%; Low - less than 15%. If taken as a whole, the probability of occurrence of ground shaking of intensity VII becomes very likely and the probability of intensity VIII approaches likely for the 50-year period.

3. Seiches

The hazard of seiches (earthquake-generated waves within enclosed or restricted bodies of water such as reservoirs, lakes, bays, etc.), is considered negligible, being limited to those areas adjacent to the several lakes and reservoirs. Such a hazard appears no greater than that posed by flooding during peak runoff periods. With particular reference to Contra Loma Reservoir and Antioch municipal reservoir, no great hazard appears to exist because of earthquake-generated waves.

TABLE VII-1

EXPECTED GROUND SHAKING
CITY OF ANTIOCH AND ANTIOCH PLANNING AREA

<u>Causative Fault</u>	<u>Distance* (Miles)</u>	<u>Expected Magnitude (Richter)</u>	<u>Maximum Ground Acceleration (Gravity)</u>	<u>Intensity (Modified (Mercalli)</u>	<u>Approximate Probability of Occurrence (50-Year Period)</u>
Concord-Greenville	12.0	4.5 - 5.5 5.5 - 6.5	0.05 - 0.1 0.1 - 0.25	VI - VII VII - VIII	Likely Intermediate to low
Calaveras	16.0	4.5 - 5.5 5.5 - 6.5	0.05 or less 0.05 - 0.25	V - VI VI - VIII	Likely Intermediate to low
Hayward	25.4	6.0 - 7.0 7.0 - 8.0	0.1 - 0.15 0.15 - 0.3	VII VII - IX	Likely Intermediate
San Andreas	44	7.0 - 8.0 8.0 - 8.5	0.1 - 0.15 0.15 - 0.2	VII VII - VIII	Likely Intermediate
Antioch**	0-5				

*Distances measured from center of Antioch as shown on map accompanying California Department of Water Resources Bulletin No. 116-2. Distance may be less than that shown in the table by up to 7 miles at the southwest corner of the Area of Interest.

**Specific evaluation of this suspected fault should await further detailed investigations.

Source: F. Beach Leighton and Associates, 1973

4. Lidquefaction

Without further investigation and in-depth study, only generalized conclusions regarding the hazard of liquefaction can be made at this preliminary stage. Inasmuch as the Antioch area is in a region of generally low to moderate seismic shaking potential, and only a relatively small portion of that area is underlain by soft soils and shallow groundwater, the liquefaction hazard in the majority of Antioch and the planning area would be assessed as low.

The relatively higher liquefaction potential would underlie those lower-lying areas adjoining the San Joaquin River having the softer alluvium or marsh deposits.

E. GEOTECHNICAL LAND CAPABILITY

The primary result of the geologic investigation of Antioch conducted by F. Beach Leighton and Associates is the Geotechnical Land Capability Map. The purpose of this map is threefold:

1. It identifies and delineates areas in which geotechnical conditions are pertinent to existing and future development.
2. It establishes land use capabilities based on the geotechnical conditions.
3. It provides specific guidelines for the geotechnical studies and reports that will be needed in the various terrain and geologic environments for the future planning and development of the City of Antioch.

The evaluation of existing and proposed development against the Geotechnical Land Capability Map will provide the basis for determining what is acceptable or unacceptable according to the level of geologic risk the community is willing to

accept and what steps can be taken to mitigate potential safety hazards to an acceptable level.

With some exceptions, geologic hazards do not restrict development but do establish a need for particular types of detailed investigations that should be conducted prior to development. The geotechnical hazards in the Antioch planning area are represented by the Geotechnical Land Capability Map and its accompanying geotechnical matrix for specific zone reference in Figures VII-3 and VII-4. The following is a summary of the indicated geotechnical hazards by terrain type.

ZONE 1 (Valley Bottom Land)

- ° Questionably suitable and unsuitable recent alluvial soils or filled ground; expansive soils.
- ° Seismic shaking effects; possible ground rupture along suspected "Antioch Fault."
- ° Localized flooding or surface drainage problems.

ZONE 2 (Foothill Terrain)

- ° Potential slope stability problems in tract development grading, particularly on north-facing slopes.
- ° Localized slope erosion, sedimentation and drainage problems.
- ° Expansive or other unsuitable soils requiring corrective measures prior to construction or during grading.

- ° Existing land uses (e.g. refuse disposal site and reservoir or flood control basins) restricting future land utilization.
- ° Possible ground rupture along suspected "Antioch Fault" and potential activity on Davis Fault.

ZONE 3 (Mountainous Terrain)

- ° Existing or potential stability problems or natural and possible future graded slopes (extensive areas affected by sliding present).
- ° Expansive or other unsuitable soils (including mine tailings or quarry workings) requiring remedial work prior to development.
- ° Localized slope erosion, sedimentation and drainage problems (including springs and groundwater seepage).

F. PRINCIPAL GEOLOGICAL AND SEISMIC ANALYSIS CONCLUSIONS AND RECOMMENDATIONS

The conclusions listed below are based on the investigation conducted by F. Beach Leighton and Associates:

1. Landslides and Slope Stability

- ° With the occurrence of the majority of landslides and potential slope stability problems in the steeper hillside terrain in the southwest portion of the planning area (Zone 3, essentially), it is logical to conclude that this portion would be most suited for open space, park or other recreational purposes, with the possibility of some low-density development.

FURTHER EXPLANATION OF THE
LAND CAPABILITY MAP IS PRO-
VIDED IN THE FORM OF A MATRIX.
SEE FIGURE VII - 4
PAGE VII - 17



VII-17



GEOTECHNICAL LAND USE CAPABILITY MAP MATRIX

FIGURE VII-4

TERRAIN TYPE (ZONE)	EARTH MATERIAL GROUP	FORMATION (BEDROCK OR SOIL TYPE)	MAP SYMBOL	GEOLOGIC/SOILS CONSTRAINTS, HAZARDS	RECOMMENDED GEOTECHNICAL INVESTIGATIONS ¹	DEVELOPMENT FEASIBILITY LAND-USE OPTIONS ²	PROBABLE MAXIMUM RESIDENTIAL DENSITY LIMITATION ³	LAND USE RISK RATING ⁴		
								SEISMIC SHAKING EFFECTS ⁵	GEOLOGIC/SOILS HAZARDS ⁶	FLOOD HAZARD
1 Antioch Plain & Tule Valley Areas Slopes are	Alluvium & Fill	Recent or young alluvial deposits, includes artificial fill and marsh deposits	IAY	Generally soft, locally laminated soils. Fills, where present, may be of peat or other organic material. Mostly inert to marginal soils or foundation conditions. Some expansive soils present. Includes main faulted areas. Low to shallow groundwater.	Evaluate and determine flood hazard and drainage problem areas. Analyze settlement or liquefaction potential.	Suited for open space, parks or recreational purposes. Some uses for permanent structures probably feasible with special site preparation, special foundations and/or drainage considerations. Not suited for important, public-use structures.	L	H		
	Deposits	Mainly unconsolidated sand and fine sands. Best deposits known to underlie the north-east corner of area.	IAD	Deposits are of unknown or variable thickness. Support soils similar to last category. May present at varying depths. Old sand dunes may contain fish or other undesirable fill materials. Local undrained depressions present.	Large structures may require special soils or foundation investigations. Local surface drainage problems may require special attention.	Multi-purpose land-use capabilities. Existing industrial, residential, agricultural & recreational uses generally compatible with geotechnical setting.	M	M-H	M-L	M-L
	Old Alluvium & Terrace Deposits, Includes some recent alluvium	Medium to semi-consolidated clay, silt, sand & gravel deposits capping low ridges & underlying levelled portions of floodplain.	IAO	Sites adjoining steep actively eroding gullies or canyons subject to slope stability problems. Expansive soils present.	Generally routine soils investigations required for most types of development. Geologic investigation limited to areas transected by known faults & for evaluation of seismic hazard.	Multi-purpose land-use capabilities. Best suited of alluvial areas from a topographic & soils geologic standpoint, for high-density residential development.	H	M	M	V
2 Valley Floor Other Areas Slopes to 10%	Best water or box control basin		2R	Generally soft, poor soils conditions, probable shallow groundwater.	Special soils investigation for grading or permanent structures required.	Suited for recreational purposes, open space.	-	H	H	H
	Land Disposal Site	Solid & liquid waste disposal cut-and-cover type.	2F	Long term settlement potential. Groundwater pollution hazard.	Expansion of existing or development of future disposal sites will probably require evaluation of environmental impact & extensive investigation.	Feasible for park or recreational purposes after appropriate site preparation. Not suited for permanent structures.	-	H	H	M
	Old Alluvium that includes some terrace deposits & recent alluvium	Clay, silt, sand & gravel deposits in low hill valley areas.	2AO	Low to high stability & flood hazard problems. Expansive soils present.	Same as for IAO above.	Generally suited for residential, strip commercial or agricultural purposes.	M	M	M	M
	Shale, Sandstone, conglomerate (Watt's Hill Formation & Taylor Hill)		2SW	Various types of rocks or formations. South-facing slopes subject to slide risk problems.			M	L-M	M	L-M
	Gravelly sandstone, some siltstone & shale (Berkeley, Berkeley-Morley & Domingue Formations)		2SS				M	L-M	L-M	L-M
	Gravelly sandstone, some siltstone & shale (Domingue Formation)		2SH				M	L-M	M-H	L-M
3 Slopes 10% to 20% Slopes 20% to 30% Slopes 30% to 40% Slopes 40% to 50% Slopes 50% to 60% Slopes 60% to 70% Slopes 70% to 80% Slopes 80% to 90% Slopes 90% to 100%	Gravelly sandstone, some siltstone & shale (Domingue Formation)		2SM				M	L-M	M	L-M
	Gravelly sandstone, some siltstone & shale (Domingue Formation)		3T					H	H	M
	Gravelly sandstone, some siltstone & shale (Domingue Formation)		3AO				M	M	M-H	M
	Gravelly sandstone, some siltstone & shale (Domingue Formation)		3SS					V	V	M
	Gravelly sandstone, some siltstone & shale (Domingue Formation)		3SH				I	L-M	H	L-M
	Gravelly sandstone, some siltstone & shale (Domingue Formation)		3SM				L	L-M	M-H	L-M
4 Slopes 80% to 90% Slopes 90% to 100%	Gravelly sandstone, some siltstone & shale (Domingue Formation)		3SP				L	M	H	L-M

KEY

RISK RATINGS

L: Low M: Moderate H: High

RESIDENTIAL DENSITIES

L: Low M: Moderate H: High

L: Low M: Moderate H: High

L: Low M: Moderate H: High

FOOTNOTES

1. In addition to those investigations, it may require the geotechnical engineer's services.

2. Does not consider other geotechnical terrain parameters and common zoning practices. Does not preclude other land uses if proven feasible.

3. These densities are existing terrain conditions and not a future planning. Will be a type of zoning (e.g., single-family or multi-unit housing).

4. For comparison of areas within the study area only. This is only a general rating scale, not to be equated with more quantitative ratings or scores outside the study area. Detailed studies would permit refinement or require modification of ratings shown.

5. Includes liquefaction or seismicity-induced displacement.

6. Includes slope instability (landslides, mudflows, etc.) expansive or other adverse soils or groundwater conditions.

REFERENCE: LEIGHTON GEOTECHNICAL ASSOCIATES

- ° Besides avoiding landslide areas, future hillside developments would be advised to minimize the number and height of those cut or fill slopes facing northward, because of the regional geologic structure.
- ° Detailed geologic and soils investigations should be required prior to development in any hillside areas (Zones 2 and 3) in order to preclude future slope stability problems.

2. Seismicity

- ° Although the Antioch area lies generally east of most of the seismic activity, a low to moderate level of earthquake shaking can be expected within the planning area.
- ° Past seismic activity within the City of Antioch (along lower Markley Canyon) may be related to movement on the suspected Antioch Fault. Recent investigations of this fault by an United States Geological Survey team indicates that a number of surface disturbances including distorted rail-road sidings, fractures with right-lateral offsets and compressional buckles in walks and curbs in Antioch are compelling evidence for recent movement on the fault.
- ° Areas expected to experience relatively greater seismic shaking within the planning area are those designated 1AY and 1AD on the Geotechnical Land Capability Map.
- ° Since areas classified 1AY and 1AD are expected to experience relatively greater seismic ground shaking effects than other areas, these areas are less appropriate for high development densities or important public structures because of the possible greater economic loss due to physical damage or greater initial cost for construction of earthquake resistant structures.

- ° Although the liquefaction hazard potential for the majority of the City is considered low, certain portions of areas 1AY and 1AD adjoining the San Joaquin River, which are underlain by soft soils and shallow groundwater, should be excluded from high density development or high risk structures as defined by the suggested seismic safety policy until additional in-depth soils engineering/seismic investigations fully evaluate the liquefaction potential and demonstrate the areas safe for such uses.
- ° Once an official seismic safety policy statement is adopted by the legislative body with regard to an appropriate seismic risk for public buildings, important utilities, and recreation facilities, it is recommended that an assessment of existing structural hazards, as well as planning for future sites, take into account the various seismic and other land use risk ratings assigned for a given area shown on the accompanying Land Capability Map.

3. Refuse Disposal Sites

- ° A continued and increasingly important aspect of land planning appears to be the selection and acquisition of suitable sites for disposal of municipal and industrial wastes and refuse. From a geologic/terrain standpoint, the greatest opportunity for such sites appears to be in Zone 3, particularly in upper Markley Canyon.
- ° Some of the more significant considerations in site selection will be:
 - a. Its environmental impact, both from a geotechnical and aesthetic viewpoint, compared with other sites.
 - b. Its long-term capacity and multiuse capabilities (conversion to park or recreational purposes) once it is abandoned.

4. Groundwater and Surface Runoff

- ° No significantly serious groundwater resource problems appear to confront the planning or future development of Antioch or the planning area. A continuing problem with the gradual quality degradation of the municipal water supply derived from the river, however, will require ongoing study and resolution on a regional basis and probably at state level.
- ° Surface runoff and flood control have been a local problem during years of heavy rainfall. Land use planning should incorporate appropriate provision for flood plain studies and improvements in the more critical areas.

5. Future City Planning and Development

- ° Soils engineering and/or geologic investigations of adequate scope should be required for future developments within the City in order to minimize or adequately solve the potential geotechnical problems discussed in this report. (Refer to the Land Capability Map explanation matrix for types of recommended geotechnical investigations in Figure VII-3.) Implementation and enforcement of appropriate codes or regulations will be an important City function.
- ° It is recommended that those structures or land uses categorized as "high risk" in the policy statement of the seismic safety element, regardless of location, be required to have sufficient geotechnical investigation to demonstrate its development feasibility as a condition of planning approval. Similarly, consideration should be given to such requirements for all land uses if they lie within an area having a high geologic/soils or flood hazard risk rating.
- ° Appropriate review and inspection by governing agencies during construction is considered an equally vital

City role in assuring the safe and successful completion of future developments.

G. STRUCTURAL HAZARDS

The majority of deaths and injuries from an earthquake are the result of partial or total collapse of manmade structures. The structures most susceptible to major quakes are the freeway overpasses; masonry buildings greater than 40 years old (built before the Field and Riley Acts of 1933 requiring earthquake resistant construction materials), constructed with or without ornamental parapets, high tension power lines, caustic and toxic gas, fuel lines and inflammable storage facilities, and the underground water mains operated by the utility districts; and the areas subject to potential flooding as a result of dam failure.

1. Freeway Overpasses

There are eleven freeway overpasses within the planning area, all of which are along State Freeway Route 4. Nine of the overpasses are vehicle oriented (located at Somersville Road, Contra Loma Boulevard, G Street, Lone Tree Way and A Street, Garrow Drive and Cavallo Road, Hillcrest Avenue, Belshaw Avenue and Oakley Road, Eighteenth Street, and Wilbur Avenue). Two of the freeway overpasses are used in conjunction with the Southern Pacific and Atchison-Topeka and Santa Fe Railroads at their respective points of intersection with Route 4 in east Antioch. The state and federal construction codes require that overpasses be of earthquake restive materials. A major quake, however, could dislodge portions of the overpasses, pose serious danger to motorists and passengers and block traffic flow of emergency vehicles.

2. Buildings

Although no extensive structural survey has been conducted, there are several masonry buildings within the

City of Antioch built prior to the Field Act of 1933 that could be structurally dangerous in the event of a major earthquake. For example, the existing Antioch City Hall constructed in 1918 poses a significant hazard to the public since it is located relatively close to the suspected Antioch Fault. A detailed structural survey should be conducted throughout the community by a qualified structural engineer to identify the location of other buildings which may be structurally unsafe and have the inability to withstand severe earth shaking.

In the past severe earthquakes, elsewhere in California, unsafe buildings have been the prime contributor to death and injury. Of note, was the collapse of the Veterans Hospital during the San Fernando Quake of 1971. Unsafe buildings should not be taken lightly - they pose the most serious threat to human safety in the event of an earthquake.

According to a report published by the Antioch Unified School District, "all existing public school buildings in use conform structurally to provisions of the Field Act." Therefore, "none of the school buildings in use by the district" - for classroom instruction - "are subject to abandonment for structural inadequacies." The old Muir School facility, which is presently being utilized as a warehouse for the district, however, is nonconforming to the Field Act as it was constructed prior to 1933. Another structure which poses potential safety hazards is the abandoned cannery on the northwest corner of Fourth and L Streets.

3. High Tension Power Lines

There are a number of high tension power lines both within the City of Antioch and in the planning area which pose potential safety hazards. These lines are supported by steel towers and carry extremely high voltage. High tension power lines pose a significant hazard if they were to fall across City streets and block the passage of emergency vehicles. They could similarly ignite fires through sparks, as well as

limit power to emergency facilities. The probability of this occurring, however, is slight since the towers are constructed to withstand severe shaking.

4. Caustic and Toxic Gas, Fuel Lines and Inflammable Storage Facilities

Another potential safety hazard with regard to earthquakes and severe earth shaking is created by the distribution and storage of toxic gases and fuels. Structural damage to gas lines and inflammable storage facilities in the planning area caused by seismic activity could create a hazard to the residents of Antioch. The probability of this occurring, however, is slight since the level of seismic activity in the Antioch planning area is considered relatively low to moderate.

5. Contra Costa County Water District

The Contra Costa County Water District provides raw water distribution to the planning area via the Contra Costa Canal and lateral lines for industrial use in the Antioch area. The district is presently conducting a study in cooperation with the State of California and Earth Science, Inc. to determine the affect of seismic activity on the district's distribution facilities. The study findings should be available to the public in early 1974.

6. Dam Failure

The Office of Emergency Services is undertaking a study of areas having the potential for flooding due to dam failure. Contra Loma Dam is the only dam that will be considered in the study. This information will not be available from the Bureau of Reclamation until approximately mid-1975. This data should be incorporated into this plan element when available.

H. RISK DETERMINATION

Risk is defined as the chance of damage or injury occurring over some period of time. It is felt by identifying the risk associated with any existing or proposed development and comparing it with the risk of alternative plans and programs, planning decisions can be made that enhance the safety of the community. Adopted risk reduction measures can produce a significant reduction in the amount of damage and casualties over a period of time. Risk provides a framework for decision making.

Acceptable risk is the level of risk below which no specific action by City government is deemed to be necessary. Unacceptable risk is the level of risk above which specific action by the City is deemed to be necessary to protect life and property. The problem of defining acceptable and unacceptable risk is one of public policy. A communitywide response to the question, "How safe is safe enough?", as opposed to an individual one, would be the most meaningful answer to the problem.

There are three basic risks to consider: (1) the risk to life and limb; (2) the risk to property; and (3) the risk to social disruption. The City of Antioch clearly has a role in protecting the public from injury and death. The reduction of this type of risk should always have the highest priority. Property damage risk is the second highest priority. It should be reduced as low as possible in all public buildings, and information such as the Geotechnical Land Capability should be provided so that individuals can adequately identify the risk to private property throughout the City. The risk of social disruption, such as a long-term loss of employment for a large number of persons over a period of time due to a major earthquake or flood, is usually seen as the lowest priority. The effects of social disruption due to a major disaster, though, could produce consequences which could greatly overshadow the effects of life and property losses in a very short time.

Minimizing or avoiding risk in Antioch often results in higher cost. The final decision is a balance of the cost involved and the level of risk desired. At some point, a risk becomes in some way acceptable. This means that the community is no

longer willing to pay more to reduce the risk any further. The cost of further risk reduction must be weighed against other uses of the money which might result in more benefit to the community. It should always be kept in mind that some risks can be avoided and are not necessary to take because public or individual objectives can be achieved at the same or less total cost by using alternatives that eliminate the risk.

I. GOAL

It is the goal of the City of Antioch to permit development in only those areas which are relatively safe from unexpected seismic activity and hazardous geological conditions.

J. OBJECTIVES

1. The City should prohibit development in those geologically hazardous areas which, by their very nature, would cause extensive loss of life, injuries, property damage and endanger the distribution of public utility services.
2. The City should strive to eliminate those existing structural hazards within the community which can be accomplished with only minimum economic disruption.
3. The City should require special geologic-seismic or engineering investigations for all proposed structures or areas exhibited on the geotechnical land capability map as 1AY and 1AD, except within those zones transected by the suspected Antioch Fault and the Davis Fault which should require special studies prior to approval of all types of proposed land use.
4. The City should protect its natural areas by limiting development in those areas, which due to adverse geological conditions and/or possible extensive surface drainage problems, will be hazardous to the overall community and to those who will inhabit the areas.

5. The City should require the developer to provide pertinent information on geological and seismic characteristics relative to the area in which he attempts to develop. If the area appears to have some questionable aspects with regard to geological and seismic hazards, this information should be forwarded on to the prospective buyer by the developer.

K. SEISMIC SAFETY POLICY STATEMENT

The public recognizes the relatively low to moderate levels of seismic activity which will most likely affect the Antioch planning area and accepts the potential risk of damage to low density residential structures. Although the nature of the geological formations and the history of earth shaking intensities appears to preclude any massive seismic hazard to low density residential development, adequate codes and controls with special safety provisions shall regulate the construction of structures which are designed to house the sick and elderly or buildings used for large public assemblies including, but not limited to, schools, theatres, hospitals and auditoriums. Additionally, adequate measures should be developed to safeguard the public from seismic hazards associated with high voltage transmission lines, caustic and toxic gas and fuel lines and inflammable storage facilities.

L. EMERGENCY PLAN

In accordance with a State Civil Defense Guide, the City of Antioch is presently updating its adopted 1960 Civil Defense procedures to reflect new concepts and ideas. Updating and completion of the City's Emergency Plan is anticipated by the summer of 1974. The City Manager is responsible for preparation and implementation of the City's Emergency Service Plan.

The plan is applicable to the Seismic Safety Element of the Antioch General Plan in that it accommodates all aspects for mutual aid, emergency communication, manpower needs and lines of command. In updating the plan by the municipality, consideration should be given to: (1) the inventory of

available supplies and protection thereof, (2) the inventory of adequate rescue and emergency supplies and protection thereof, (3) the protection of life support systems, (4) maintenance of a roster of manpower to staff the operating components of the Emergency Plan, (5) the designation of evacuation routes and the development of emergency service centers, and (6) initiate a system to test and evaluate the effectiveness of the plan.

At the present time Antioch Police Department serves as the central emergency center for the community. Although there may be refinements in the City's new emergency plan, the Police Department will continue to be the headquarter facility for emergency and disaster preparedness. The Antioch Water Treatment Plant provides an alternative center to the headquarter facility.

Although an emergency plan is normally based on emergency circumstances and conditions of a national emergency, it can be adapted to geological hazards and unexpected seismic activity if the community acknowledges the potential hazards and accepts the responsibility to effectuate a plan of action. An emergency plan will help alleviate potential disaster and also help prepare, mobilize and employ public and private resources to meet essential needs when a disaster occurs.

M. PROVISIONS FOR PERIODIC UPDATING OF SEISMIC SAFETY ELEMENT COMPONENTS

As new seismic, soils engineering and geologic data become available and are analyzed and evaluated, it will become necessary to periodically review and revise seismic risk ratings and area boundaries, as well as the other land use risk ratings and boundaries. Consequently, provisions should be adopted to require annual review and at least every five years an updating of the data, interpretations and analysis on which it is based. This procedure is necessary because:

1. Techniques and practices in the fields of planning and emergency response are advancing at a fast pace.

2. Laws relating directly or indirectly to seismic or public safety matters change periodically.
3. Earth science data on which risk maps are compiled, in all likelihood, will be supplemented and partially revised by future studies.
4. Updating and modernization of building codes may be warranted by new research in structural failures during earthquakes.
5. Risk concepts and environmental values have been changing rapidly in recent years and will continue to do so in the future.

N. ACTION PROGRAM

1. Initiate a systematic program to rehabilitate or remove all buildings which do not satisfactorily meet the structural or seismic safety standards of the 1933 Riley Act. The Riley Act requires that all buildings, except certain types of dwellings and farm buildings, meet specific lateral force requirements. Such a program would include minimum repair requirements and minimum structure removal and seismic safety standards.
2. Instruct staff to review the Uniform Building Code in light of recent technological advances with respect to seismic safety.
3. Instruct staff to prepare new ordinances or amendments to existing ordinances and other land use regulations which will mandate the review, evaluation, and restriction of land uses that may be subject to undue risk in hazardous areas in Antioch. Regulations should specifically include requirements relating to geologic, seismic, flood and landslide hazards.
4. Instruct the staff to require special geological/seismic or engineering investigations for all proposed structures

in areas exhibited on the Geotechnical Land Capability Map as 1AY and 1AD. In connection with this policy, the staff shall require a special geotechnical investigation for all types of land use and structures in the zones transected by the suspected Antioch and Davis Faults. (Refer to Figure VII-3.)

5. Require special geological/seismic or engineering investigations for all proposed structures to be utilized for large public assembly, including but not limited to schools, theatres, hospitals and auditoriums. Additionally, future high voltage transmission lines, caustic and toxic gas and fuel lines and inflammable storage facilities should be located in areas relatively safe from seismic hazards.
6. Instruct the staff to require detailed geological soils investigations prior to development, in the specific area where construction is to occur in the hillside area, in order to preclude future slope stability problems.
7. Instruct the staff to incorporate the findings of the Contra Costa County Water District Study pertaining to seismic activity into this General Plan element when the study is completed.
8. Adopt the detailed recommendations of the Geotechnical Land Capability explanation matrix as set forth in this element of the Antioch General Plan. (Refer to Figure VII-4.)
9. Adhere to the recommendations of the City's Emergency Plan to deal with natural emergencies.
10. Continue to refine and revise the Emergency Plan as new information becomes available.
11. Require developers to provide and forward pertinent information on geological and seismic characteristics

to the public, particularly with reference to the prospective buyers in the development.

12. Continue to cooperate with Contra Costa County, other county communities and other local jurisdictional agencies (schools, utilities, etc.) to prepare and maintain a joint action emergency preparedness program.
13. Request review of current information and investigations as necessary by the State Geologist and State Mining and Geology Board of the suspected "Antioch Fault" for a determination of the effect of the provisions of Chapter 7.5, Division 2 of the Public Resources Code (Alquist-Priolo Geologic Hazards Zone Act).
14. Establish a moratorium on new construction along the Davis Fault and within the suspect Antioch Fault zone (tentatively 600 feet wide) until or unless specific investigations show the fault to be nonexistent or such construction will be safe and unaffected by potential ground rupture.

VIII

SAFETY ELEMENT

A. INTRODUCTION

The Safety Element of the General Plan is for the protection of the health and welfare of the citizens of Antioch. Both government and the general public have recognized the hazardous potential of fires, floods and landslides in the planning area.

Recently, safety as a function of planning, was included as a mandatory element of the General Plan by the State legislature. State law requires the Safety Element to highlight community protection from fires and geologic hazards and should point out evacuation routes, peak load water supply requirements and minimum road widths in the case of a catastrophe.

This element was completed with the intention of conforming to other elements of this General Plan. The Safety Element has been developed particularly in conjunction with the Seismic Safety and Environmental Resource Management Elements.

B. GOAL

It is the goal of the City of Antioch to provide to its citizens an environment that is reasonably safe from unrecognized hazards and unexpected disasters.

C. OBJECTIVES

1. Provide timely, efficient and reliable assistance to disaster victims and also to areas where conditions warrant evacuation of people and to avoid or mitigate loss of life or property.
2. Provide for the highest quality of fire, police and health protection possible for all Antioch residents.
3. Reduce the potential of harmful fires throughout the community by making every effort to control all fires at their source and by careful land use planning, zoning and construction practices.
4. Provide adequate supplies of water at appropriate locations for fire suppression.
5. Reduce the possibilities of danger and damage from seismic hazards and all other geological hazards throughout Antioch to acceptable risk levels.
6. Provide an environment that is reasonably safe from uncontrolled hazards involving either the health and welfare of citizens or the loss to the economic base.
7. Create the tools necessary to eliminate and/or mitigate hazards prior to development of the land within and surrounding Antioch.

D. FIRE HAZARDS

To the south of Antioch lies the uninhabited hills and mountain terrain of the Mount Diablo Range which are covered with grass, scrub and trees. The dry, hot climate coupled with steep topography and poor access make the hillsides an extremely high fire hazard in summer months.

The Public Resources Code of the State of California defines hazardous fire areas, outlines use restrictions, states minimum protection requirements and assigns administration of the code with regard to fire protection to the State Division of Forestry.

The County Supervisors Association of California has prepared Fire Safety Guides for California Watersheds which includes requirements for access, water supply, brush clearance, densities, fire breaks and street naming and building numbers.

Of particular concern within the southern portion of the City and its immediate area is east-west circulation for emergency and evacuation purposes. As pointed out in the Circulation Element, existing east-west access is insufficient. However, efficiency of the system can be expected to improve in the future with the completion of planned street improvements on Tregallas Road, Putnam Street, Davison Drive and Paso Corto Road. A reduction in the emergency fire response time to industrial and residential districts in the eastern portion of Antioch will be further facilitated by street improvements on Willow Avenue, Vera Lane and Hillcrest Avenue. Railroad grade separations at Somersville Road, A Street and Hillcrest Avenue are also recommended in connection with the Circulation Element to free the movement of traffic and thereby reduce emergency vehicle response time to potential fire hazards in the community. Recommendations to relocate Fire Station No. 2 from Putnam Street and Lone Tree Way to Davison Drive and Garrow Drive and to build new fire stations in the east and west sections of Antioch will improve domestic and industrial fire protection throughout the community.

E. FLOOD HAZARDS

Annual flood hazards exist along portions of the San Joaquin River, and particularly along the lower portions of West and East Antioch Creeks. As the upstream watershed area is urbanized and percolation areas decrease, runoff will be greater during peak storms and hence the flooding hazard will increase. With respect to the San Joaquin River, it will become increasingly more important that the river's flood plain be retained in its natural state. To alleviate the potential flood hazards in the Antioch area, it is recommended that the construction of storm water channels with sufficient capacity to carry anticipated peak storm runoff along all drainage courses in the City be undertaken.

F. STEEP LAND

Areas of 25 percent or greater slope in the planning area have been mapped. Refer to the Environmental Resource Management Element, Figure 9. No development should be allowed in these areas due to instability of steep land areas. Should development be permitted, it is recommended that detailed soils, geologic and engineering studies be undertaken and sufficient mitigation and safety measures be provided. (Refer to Seismic Safety Element)

G. AIRPORT CLEAR ZONE

The General Plan recommends that future activity at the Antioch Airport be restricted to small privately operated aircraft and that an alternative airport site be selected in the planning area to alleviate potential hazards associated with the operation of aircraft at the existing airport. As long as the existing airport remains in its present location, it is recommended that stringent zoning controls be established for zones associated with takeoff and landing activities at the airport. Open space, agricultural and resource management uses are recommended for such zones. Of course, this potential safety concern requires close coordination with Contra Costa County and future studies of airport locational alternatives should also include the Airport Land Use Commission and Federal Aviation Administration.

H. STRUCTURAL DEFICIENCIES

Antioch, particularly the older downtown core, contains a number of buildings built prior to adoption of modern building codes and hence lack modern safety features. Outdated and insufficient electrical wiring, fire blocking, unsafe heating systems and open stairwells are all too common in many of these structures. The City should develop a systematic code enforcement program that will provide sufficient provisions to inspect all buildings used by the general public, including private commercial business and office buildings, hotels and apartment buildings. Additionally, code enforcement programs should continue to enable the City's Fire Department to survey areas which may lack hydrants or insufficient water mains. Both the code enforcement program and its related provisions should support and tie into the City's Fire Insurance Program. Usually such a program provides credits towards a lower fire insurance rate.

I. WATER HAZARDS

The water of Contra Costa Canal, Municipal Reservoir, Lake Alhambra, San Joaquin River and Contra Loma Reservoir pose a natural hazard to the non-swimmer. Boating has become increasingly popular in the Delta region and the City should take every precautionary measure to insure boating activities in the Antioch area are safe and free of unrecognized hazards. With respect to the restricted channels and waters of Contra Costa Canal, the City of Antioch should assist the Contra Costa Canal District in safety preventive measures, including an annual inspection of fences and gates.

J. ACTION PROGRAM

1. Develop those arterial streets as specified by the Circulation Element. Of particular concern is east-west circulation to allow emergency access and exit.
2. Develop an Emergency Plan. (Refer to Seismic Safety Element)

3. In connection with emergency operations, initiate steps to undertake railroad lowering or grade separation feasibility studies of arterial streets which cross the Southern Pacific Railroad. (Refer to Circulation Element)
4. Require all future residential development to install a looped water system of no less than six inches in diameter with appropriately placed fire hydrants to insure adequate support systems for emergency fire protection.
5. Instruct staff to prepare an equipment renewal program so that adequate equipment is always available for emergency operations.
6. Continue to enforce the weed abatement program and expand the control of flammable growing material in the open lands of the community. Encourage the use of the program in the unincorporated areas adjacent to the City.
7. Continue to provide assistance to other agencies with respect to water and boat safety.
8. Instruct staff to annually review the fire safety prevention program within the community and report. Such review should be done in cooperation with the Fire District and Police Departments, State Forestry and other State and County agencies as deemed appropriate.
9. Continue to review development proposals by concerned Fire District and Police Departments in order to determine compatibility with this element.
10. Initiate steps to continue a systematic inspection program of all buildings to determine existing and potential fire and other safety hazards within the community.
11. Instruct staff to review the City building and zoning

code and make recommendations for incorporating objectives of this element into those codes.

12. Instruct the Fire District to investigate and report regarding any urbanized area which currently lacks hydrants or insufficiently sized water mains.
13. Grade surface areas next to pipelines so that, in case of rupture, pipelines drain away from surrounding uses.

IX

LAND USE ELEMENT

A. INTRODUCTION

The California State Planning Law requires a land use element of all city general plans, as follows:

"A land use element which designates the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal facilities, and other categories of public and private uses of the land. The land use element shall include a statement of the standards of population density and building intensity recommended for the various districts and other territory covered by the plan which are subject to flooding and shall be reviewed annually with respect to such areas."

The land use element involves planning to appropriately allocate the various uses of property to most adequately fulfill the needs of the people over the long-range time frame. It includes establishing the optimum relationship of planning goals and objectives, and physical, economic, and social conditions. Included within this element are land use

policies and proposals, a general description of land uses and their intensities for the planning area, graphic representations, development recommendations and an action program.

The Land Use Element for Antioch provides an orderly balance of both public and private land uses throughout the community and is based mainly upon the concept of preserving and protecting the existing environmental features and natural resources which are indigenous to the planning area. The element attempts to optimize opportunities and enhance the City's existing character by providing an arrangement of land uses which will allow the highest degree of economic expansion balanced with conditions which will foster desirable growth patterns and rates for Antioch.

Based on a controlled growth policy, environmental and social determinants, the land use plan recommends moderate growth to 60,000 population for the planning area with a hypothetical population range between 41,499 to 64,613. A mid-range population of approximately 53,000 could be expected in light of the variable residential densities for single-family and multiple-family development within the community.

A major principle in allocating residential land use is to provide for housing and land use densities which fulfill the diverse requirements and life styles of the citizens yet still create a cohesive urban form. Allocation of accessory land uses to serve such an expected population included open space and recreation requirements as well as commercial and employment needs. Each of the recommended land use designations on the plan has been considered in light of existing land use and circulation patterns in addition to being subjected to in-depth review and scrutiny by a concerned Citizens Committee.

The Land Use Element provides the framework within which to define the future urban and economic form of the community. As already indicated, the economic character of the community should be compatible with the more broadly defined environmental and social character and goals of the citizenry.

The Antioch General Plan program has provided several guidelines which are relevant to the future pace and pattern of economic development within the community. The first set of guidelines emerged from the Community Attitude Survey conducted in 1972; the second is reflected in the Goals and Objectives developed by the Antioch General Plan Goals Committee during the course of the General Plan Study program.

The land use goal and objectives are consistent with the fact that Antioch has emerged as one of the fastest growing single-family residential communities in Contra Costa County. The objectives provide for continued commercial and industrial development, but in a form and location consistent with the existing residential character of the community.

B. GOAL

It is the goal of the City of Antioch to provide for an orderly balance of both public and private land uses within convenient and compatible locations throughout the community and to insure that all such uses--their type, amount, design and arrangement--serve to protect and enhance the character and image of the community as a desirable river-foothill oriented urban area.

C. OBJECTIVES

1. The City should endeavor to preserve and maintain the present predominance of low-density residential development within existing and future neighborhoods throughout the community.
2. The City should encourage a variety of residential accommodations and amenities in the downtown area so as to increase the advantages of "close in" living and convenient shopping in the commercial core.
3. Medium and higher density residential developments should be limited to those areas where compatible to adjacent land uses, and where adequate and convenient commercial services and public support systems such as streets, parking, park, schools and utilities are, or will be, adequate to serve them.

4. Buildings used for large public assembly, including, but not limited to schools, theaters, auditoriums and high density residential development, shall be limited to those areas which are relatively safe from seismic activity, flooding and hazardous geological conditions.
5. The neighborhood atmosphere and identity of existing residential areas should be preserved and encouraged.
6. The City should provide for a sufficient diversity of land uses so that schools, parks and recreational areas, churches and neighborhood shopping centers are available in close proximity to each resident of the community.
7. The City should provide within the central business district an organized system of land uses to be grouped in a village setting. Such uses should include administrative and professional offices, business services, retail outlets and governmental offices.
8. The City should encourage development within the central business district of the downtown area, a variety of space and locations for speciality, unique and attractive type shops with a strong pedestrian orientation, thus, better enabling the area to attract a wide range of village-oriented type uses which would otherwise locate elsewhere.
9. The City should encourage a variety of commercial and tourist recreational activity along the riverfront in connection with special entertainment facilities, restaurants and other uses which will foster the village concept.
10. The type and amount of commercial uses should be limited to those which can feasibly be supported by each trade area and which are consistent and compatible with the prime concept and image of the community as a desirable river-foothill area.

11. Commercial recreation and destination tourist facilities should be carefully controlled so as to protect the residential character of the community and the opportunity of local residents to enjoy in a safe, attractive and convenient manner the continued use of the river and local transportation and parking facilities.
12. Consistent with all other policies to protect and enhance the residential character of the community, the City should encourage all other public and private water-oriented recreational and entertainment facilities as a means of providing maximum public access to the river-front.
13. The City shall establish within the Land Use Element and protect through zoning regulations suitable and adequate sites for commercial and industrial facilities which will provide for community and regional needs.
14. General industrial development within the community should be limited to those areas and uses which are provided with adequate transportation access utilities and services and are compatible with adjacent residential communities and meet the overall environmental goals of the plan.
15. The City should develop and maintain suitable and adequate landscaping, utility undergrounding, sign control, site and building design, parking and performance standards to insure that all existing and future commercial and industrial developments are compatible with surrounding land uses.

D. HOUSING AND RESIDENTIAL AREAS

1. Present Status

The original townsite of Antioch (founded in 1849) is located just north of State Freeway 4 adjacent to the banks of the San Joaquin River. Although a few of the earlier structures in this area still remain, the vast majority of homes have been constructed in the southern portion of Antioch since 1960 when the community began to experience a period of dramatic growth and development. Today, more than twenty-seven percent of the

City's total land area is devoted to residential development, with a predominance of single-family owner occupied housing units. Although housing in the Antioch area has been reasonably priced in the past, residential development has generally lacked a variety of housing types in terms of design and size. For the most part, subdivisions are well maintained and lot sizes have been traditionally small (6,000 sq. ft.). Remodeling and additions in the past have been common, and with few exceptions, most homes have increased markedly in value since construction.

Since 1960, the number of single-family units constructed annually has exceeded multiple-family development. During the period 1960-1972, 70.5 percent of the total dwelling units constructed were of the single-family type. This increase in single-family unit construction is related to three primary factors:

- ° Initially low land values
- ° Significant housing demand
- ° Housing developers desire to accommodate this demand by recognizing the need to provide adequate housing for young families in the community and other neighboring communities.

This trend can be expected to continue because an extensive percentage of the total acreage planned for low density residential use is presently under consideration for approval by the City.

A realization of the above factors prompted an analysis in the general plan process to determine where multiple-family dwelling unit construction would be compatible with existing and future land uses. A limited number of sites for multiple-family development were determined to be needed and incorporated into the General Plan. The most apparent provisions of the land use element, with reference to medium to high density multiple-family residential development, are found in the area surrounding County East Regional Commercial Center and the downtown area.

2. Future Outlook

Since most of the residences within the Planning Area have been constructed during the past fifteen years, housing is relatively new and well maintained; however, the problem of aging structures is evident in portions

of the older city area, and this problem can be expected to increase with time. The community has recognized the threat of further deterioration in older residential areas and alternative methods of rehabilitation and revitalization have either been or will be exposed in conjunction with the recommended goals and objectives of the Antioch General Plan Goals Committee.

If nothing is done to revitalize the older residential areas, costs of public services in the future will exceed revenues. The spread of blight would compound this economically unsound alternative.

Distinct advantages to the community resulting from the rehabilitation and/or preservation of these older residential areas are:

- ° Blight can be curbed and eventually eliminated through private renewal.
- ° Renewal of the downtown area would be accelerated because of increased market support.
- ° The community would benefit from increased tax revenues and improved stability.

The plan proposes the continued maintenance and revitalization of deteriorating or blighted residential areas within the community through a systematic program of building and housing code enforcement. In this effort, it is recommended that the City encourage private remodeling and renovation of structures and development of properties throughout the community.

With respect to new housing in Antioch, the plan calls for a retention of the single-family residential development emphasis. This particular type of development complements the community's moderate growth policy and fosters the existing character of Antioch as a low density river-foothill oriented residential community.

In order to provide a variety of new housing types and lot sizes, a series of variable residential densities are proposed in the Land Use Element. Traditionally, Antioch's zoning and subdivision ordinances have predominantly permitted the development of single-family homes on standard 6,000-7,000 square foot lots. This condition has placed severe building constraints on prospective buyers who wish to purchase a single lot within the community to privately construct a home of non-conventional size. Under the proposed densities in the General Plan single-family subdivision lots would vary from 6,000 square feet to an acre in size or would allow single-family residential development to range up to two DU per gross acre on hillside terrain, up to four DU per gross acre on moderately flat land with minimal geotechnical problems, and up to six DU per gross acre on flat terrain with no geotechnical problems.

In connection with the six recommended densities, the General Plan encourages several planned unit development specifically within the six to ten units to the gross acre category. The planned unit development concept has provided the means for the City to encourage a variety of housing types in planned residential neighborhoods and may be applied to any basic residential density proposal.

E. RESIDENTIAL DENSITIES AND DISTRIBUTION

Density is the unit of measure used in the General Plan to compare and describe the intensity of residential land use. Different categories of density constitute policy statements establishing the concept of development considered appropriate at various locations within the Planning Area.

In the past, most of Antioch's single-family residential areas have developed with four to six dwelling units per gross acre; however, in order to keep in line with the community's controlled growth policy, some residential areas are designed to have densities ranging primarily from one to two and two to four dwelling units per gross acre in addition to up to six dwelling units per gross acre.

Six ranges of density have been incorporated into three basic residential categories in the General Plan. Each of these categories is implemented by one or more zone classifications.

Variable residential densities are recommended for particular areas on the General Plan, specific density requirements will be determined by the zone classification within which the property is located and the site development standards that pertain to each particular zone. The variable residential densities in a particular area reflect the maximum holding capacity for that neighborhood. Although densities may fluctuate within specific locations of the neighborhood, combined densities should not exceed maximum holding capacity for the area.

1. Low-Density Residential

This category includes all single-family houses and is intended primarily for those areas of substantial low-density residential development. The major effect of this category will be to preserve existing areas and to assure that reconstruction and replacement activities are totally compatible with the current low-density residential pattern in Antioch. Densities proposed in category include:

- | | | |
|--------------------------|---|--|
| Up to 2 DU/gross
acre | - | Areas slated for future hillside development with geologic-topographical and environmental constraints or other environmentally or geologically sensitive locations. |
| Up to 4 DU/gross
acre | - | Areas with flatter terrain characteristics and only minor geological, topographical or environmental constraints. |
| Up to 6 DU/gross
acre | - | Typical subdivision development having 6,000 to 7,000 square foot lots on level terrain with no or relatively few geological or environmental constraints. |

Low density residential development is proposed for the eastern, southeastern and southwestern sections of Antioch. Refer to the Land Use Map for the location of specific density designations.

2. Medium Density Residential Areas

Residential densities in this category are recommended to range from up to ten DU per gross acre. The General Plan reflects a total of 344 gross developable acres in this category. (Refer to Land Use Map)

3. Medium High and High Density Residential

A total of 165 gross developable acres is designated for Medium to high density apartment complexes are typical of development in this category.

A total of 165 multiple-family residential use. Lands designated for medium high and high density residential are as follows:

- o Areas generally south and east of County East Regional Shopping Center
- o Area surrounding Antioch Shopping Center
- o Areas near the Downtown Commercial Core
- o On south side of State Freeway 4 near Hillcrest Avenue
- o East of Cavallo Road between Southern Pacific Railroad tracks and State Freeway 4
- o East of A Street between Wilbur Avenue and 6th Street
- o East of Lone Tree Way north of Davidson Drive
- o East of Somersville Road and south of 10th Street
- o West of and adjacent to Markley Creek between Sycamore Drive and Mahogany Way

F. COMMERCIAL AREAS

1. Present Status

Commercial development in the City of Antioch has concentrated in the nine areas indicated on Figure IX-1 page IX-13 locating primarily along the arterial highways and adjacent to freeway interchanges. Although these commercial areas have developed in response to market demand and accessibility to the market served, and each commercial areas has its own unique function and characteristics, there appears to have been little attempt in the City to structure this commercial development to market support. Changes in the circulation pattern with the development of the freeway system, as well as changes in marketing practices and demands, have also had an impact on the character and nature of the commercial development in Antioch.

Antioch has a high percentage of developed land devoted to commercial use. Current land use data indicates that nearly 7 percent of the total developed acreage in the City is allocated for commercial uses, including office and professional developments. This percentage is significant in view of the fact that the national surveys indicate that in cities of a population size similar to Antioch, only 3 to 5 percent of the developed land is devoted to commercial use. Antioch's unusually high percentage of commercial land can be explained primarily by the following factors:

- ° The development of County East as a regional facility which serves an area larger than the existing population of Antioch. Regional facilities tend to be growth inducing commercial developments and as such, are developed prior to the ultimate development of the population of the area.

The obsolescence of certain commercial areas. As accessibility and marketing practices and demands change, the desirability of certain commercial areas changes and some areas become obsolete.

Historically, the commercial facilities in the vicinity of Third and G Streets, indicated as Area 1 on Figure IX-1, Page IX-13 constitute the original commercial core area of any significance in the City of Antioch until the mid 1960's. Since then, commercial development has relocated along A Street and 18th Street, indicated as commercial Area 3; along 10th Street, indicated as Area 2; and at the intersection of State Freeway 4 and Somersville Road in the vicinity of the County East Regional Shopping Center, or Area 4. Consequently, market demand in the central business district has declined and shopping preferences and trends have changed significantly.

Table IX-1 summarizes the existing commercial land and land zoned for commercial uses in 1972 within the City of Antioch and within the planning area. Although excess commercial zoning is desirable to allow for adequate competition in commercial development, it would appear that the City has excessively overzoned land for commercial development in light of commercial needs. The new State requirement for consistency between zoning and the General Plan should not be interpreted to mean that all commercial projections should be immediately reflected in terms of commercial zoning. Rather, land should be zoned for commercial development in relationship to actual needs and demands.

TABLE IX-1

EXISTING COMMERCIAL LAND USE AND ZONING, 1972

Existing Commercial Land Use, 1972

City of Antioch	332 acres
Antioch Planning Area	458 acres

Existing Commercial Zoning, 1972

City of Antioch	407 acres
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Source: Land Use Analysis, Antioch General Plan Study
Lampman and Associates, February 1, 1973.



EXISTING COMMERCIAL AREAS

FIGURE IX-1

2. Future Outlook

Future commercial growth in the City of Antioch can be expected to increase as population increases. However, retail commercial growth in the downtown area will be determined by the success of local merchants and City officials to develop community support for the revitalization of downtown. The downtown merchants have joined with City officials in establishing a committee to consider alternative proposals for such a downtown revitalization program. A preliminary land use and circulation concept has been prepared for the downtown area in connection with the General Plan. One of the key recommendations contained in this downtown study is that commercial revitalization depends upon increased retail demand for specialty shops with a strong pedestrian orientation and a new one-way street circulation pattern. Additionally, the merchants' association has been working on details pertaining to alternative architectural treatments for the area.

The DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS AND PROJECTIONS prepared in early 1973 as part of the Antioch General Plan Study projected an overall demand of 600 acres of commercial use for a population of 84,000 people. As the Plan developed through the Citizens Goals Committee and consideration was given to environmental restraints and overall community desires, the Plan was based on an ultimate population of 60,000 people. Based on this detailed retail analysis, Urban Land Institute studies, other commercial analyses, and the unique characteristics of the City of Antioch, the commercial land use projections for a population of 60,000 were developed as indicated in Table IX-2, with a total of 476 acres distributed between retail shopping and service facilities and offices. A detailed breakdown on the factors used in developing these aggregate figures is indicated in the next section under commercial distribution.

TABLE IX-2
PROJECTED COMMERCIAL LAND USE BASED
ON POPULATION OF 60,000

	<u>ACRES</u>	<u>ACRE/1000 POPULATION</u>
Offices	37	.61
Shopping and Services	<u>439</u>	<u>7.31</u>
	476	7.92

The acreage represents 4.06% of the total land use.

G. COMMERCIAL DISTRIBUTION

Traditionally, the Commercial Land Use of a General Plan serves as a tool to guide decisions concerning the location and amount of commercial facilities necessary to adequately serve the community. The following discussion distributes proposed commercial development by its market scale and type of commercial activity to twelve commercial areas. These proposed commercial areas focus around the nine existing commercial areas indicated in Figure IX-1 with additional neighborhood level facilities proposed in the areas of primary residential development. Considering the complexity and nature of commercial structure, an attempt was made to allocate various types of commercial activities to each of these twelve areas shown in Figure IX-2.

The General Plan proposed 476 acres or 4.06% of the total area for future commercial development based on a projected population of 60,000 as indicated by market scale and type of commercial activity in Table IX-3.

TABLE IX-3

Proposed Commercial Development by Market Scale and Type of Commercial Activity.

Market Scale	Type of Commercial Activity	Acres/ 1000 Population	Population Base	Projected Acreage
Neighborhood	Shopping	1.23	60,000	74
Community	Offices	0.62	60,000	37
	Service	2.13	60,000	128
	Shopping			
Regional	Offices			
	Service	2.37	100,000	237
	Shopping			
TOTAL				476 Acres

The following Commercial Land Use categories describe the level of facilities that should be located within each commercial classification. The amount of acreage indicated for each commercial land use is directed to areas that will specifically be designated to contain only those levels of facilities. It is most likely that community commercial facilities will also respond to neighborhood needs and that regional commercial facilities will respond to community and some neighborhood needs.

The acreage proposed, then, does not take into account commercial overlap, those areas that will contain two or more levels of commercial facilities.

1. Neighborhood Level Facilities

The neighborhood shopping and service facilities located in these areas are intended to provide space for small markets, drugstores, and personal service facilities which are customarily located within one mile of the residential areas they serve. These service areas may be nested or located within larger scale facilities such as regional or community scale centers. Twelve of the commercial areas indicated on Figure IX-2 are proposed to provide neighborhood shopping and service facilities.

This is distributed as indicated on Figure IX-3. The location of these service centers is correlated and dependent upon residential development of densities indicated on the General Plan.

2. Community Level Commercial Facilities

Community commercial facilities are to provide communities ranging in size from 5,000 to 15,000 population with commercial activities responding to community needs. There is a direct link from community centers to immediate and nearby neighborhoods and therefore it is important that community commercial centers be located at major and/or arterial roads to provide the best accessibility with the least amount of traffic congestion.

Within the eight community commercial facilities indicated on Figure IX-4, Page IX-20, there are grouped the following three types of commercial activities.

a. Offices

Offices and professional services can best be described at the community scale and are characterized by professional and business offices and the small consumer service establishments. These facilities do not readily lend themselves to organized "shopping center" development and tend to strip out along arterial streets. This tendency may be offset by providing streets within an area which serves to foster desirable compactness and needed accessibility. Community office facilities are located in four of the commercial areas as indicated in Figure IX-4.

b. Service Facilities

Community service facilities provide a community area ranging in size from 5,000 to 15,000 population with commercial activities which service residential needs. These types of facilities are more oriented toward product repair rather than product sales. The type of activities are to include automobile servicing, the sales of automobile parts, and the repair of household goods. Several of these activities may conflict with either surrounding land uses. As a result, careful evaluation of sight designing should be followed.

c. Retail Facilities

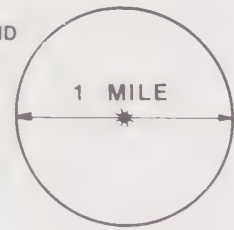
Community retail facilities provide retail service to a larger number of families than do neighborhood facilities. The types of activities provided in these centers are geared toward medium volume retail activities and include such facilities as variety or junior department stores, florists, milliners, children's wear, gifts, candy, restaurants, banks, and a postal service if the location and service area are substantial.



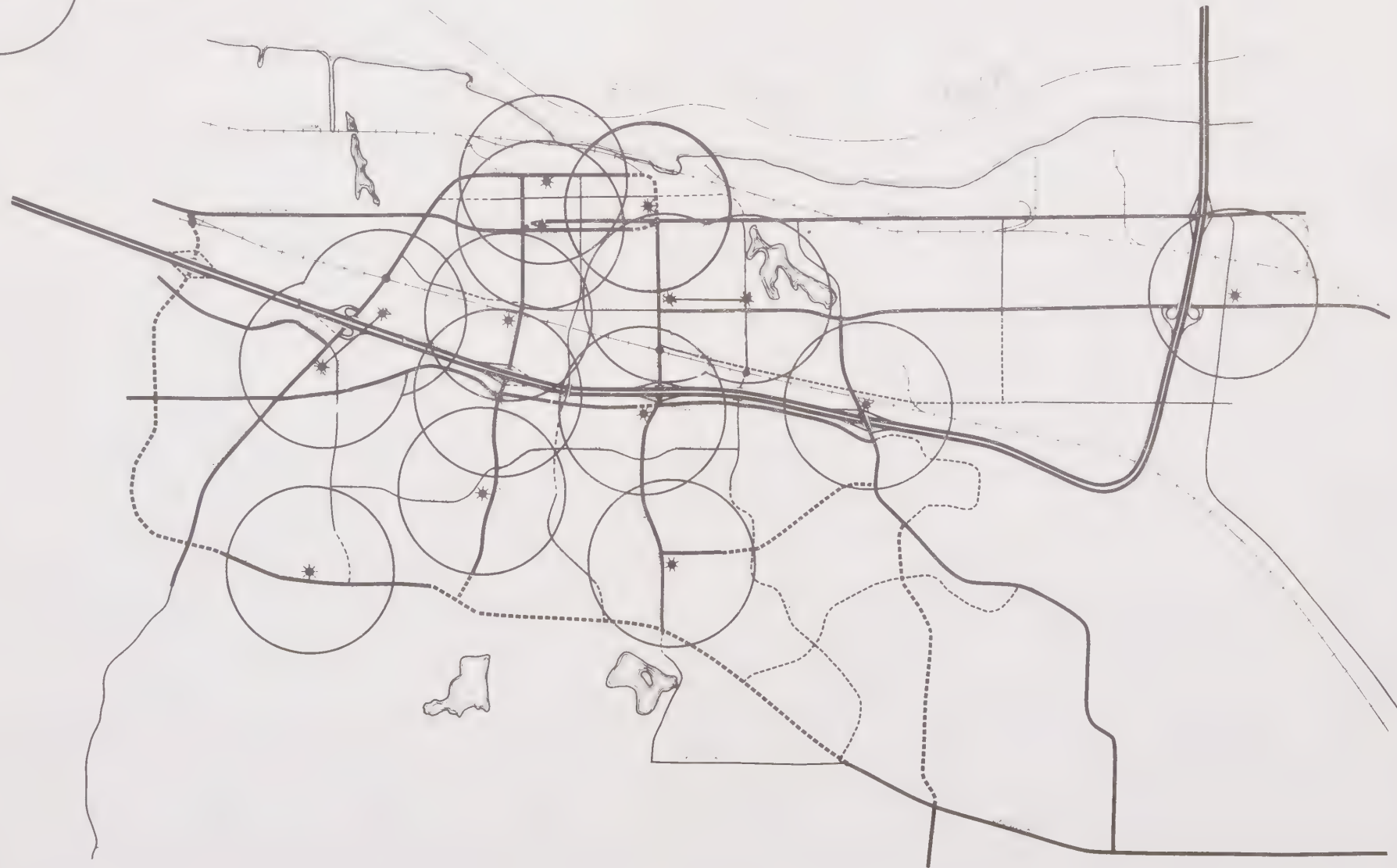
PROPOSED COMMERCIAL AREAS

FIGURE IX-2

LEGEND



SERVICE AREA



PROPOSED NEIGHBORHOOD COMMERCIAL FACILITIES

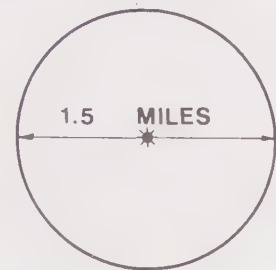
FIGURE IX-3



LEGEND

⊛ OFFICE & OTHER

* OTHER COMMUNITY LEVEL COMMERCIAL



SERVICE AREA



PROPOSED COMMUNITY COMMERCIAL FACILITIES

FIGURE IX-4



3. Regional Facilities

A regional commercial center serving an area with a population of approximately 100,000 people is intended to provide greater variety of activities which cannot be obtained at the neighborhood and community levels. It should be mentioned that, although the following categories of commercial activities are intended to be located at one general location, the actual regional center plan should strategically locate the three general activities in a compatible manner to avoid conflicting uses within the center.

a. Office

Regional office facilities are those facilities which provide a common, non-retail commercial service and which draw supporting population from a regional base. The types of activities which would be included are financial investment and travel, i.e., stock brokerage, A.A.A., travel bureau, and financial lending institutions.

b. Service

Regional services provide repair and consumer services to residential areas and other business establishments. Included in service facilities are warehouses, storage facilities, and commercial distributorships. Since their characteristics often appear to be industrial in nature, they generally seek independent locations and low land costs with good accessibility. They should be separated from residential areas by physical barriers and a proper orientation and spacing of structures and storage facilities. Regional service facilities are proposed to locate in relationship to the County East Shopping Center and the shopping areas along 10th Street, as well as the Hillcrest Avenue area.

c. Retail

Regional retail facilities are oriented toward higher volume commercial activities, since by nature of regional commercial centers a large contingency is attracted, resulting in peak pedestrian traffic and higher volumed sales. It is important, though, that the types of retail facilities provided are general and provide the supporting population with everyday needs. The retail activities would include those commercial activities found in neighborhood and community retail areas as well as some (preferably two or more) major department stores.

H. COMMERCIAL STRUCTURE AND DEVELOPMENT STANDARDS

1. Commercial Structure

In understanding the commercial structure of the community, it is important to remember that individual commercial establishments tend to locate relative to a common market area based on competitive, supplementary, and complementary economic linkages. The term "competitive" relates to establishments selling goods or rendering services of the same general quality and price range, two grocery stores, for example. Supplementary relates to establishments offering similar goods or services at different quality and price range, thus providing depth for product or service choice. A grocery store and a delicatessen are supplementary uses. Complementary relates to establishments offering closely associated services, giving breadth to the number of products and services available. A grocery store and a drug store are examples of complementary uses. In the public interest, these relationships should be encouraged among commercial establishments. A commercial pattern is the result of this economic interplay expressed in the physical relationships which commercial land uses seek. Understanding these relationships is necessary in developing the commercial projections and distributions indicated in the previous sections. Examples of the probable association of uses within each of the various types of commercial activities considering this plan at each different market scale are shown in Table IX-4, page IX-23.

2. Physical Characteristics Of Commercial Development

Based on these economic relationships, marketing areas and the nature of their physical development, commercial establishments tend to congregate into three basic groupings -- neighborhood, community and regional. Certain uses, such as travel services, do not readily fall into any of these groupings due to the fact that their market scale and nature of development does not relate them to other types of commercial activity. Travel services are indicated as external uses for purposes of this discussion.

Table IX-4 summarizes these physical characteristics by the various commercial activities. It must be remembered that rarely is a commercial area made up

M A R K E T S C A L E

EXTERNAL

REGIONAL

COMMUNITY

NEIGHBORHOOD

TRAVEL SERVICE

SERVICE

SECONDARY SHOPPING

PRIMARY SHOPPING

SERVICE

RECREATION

OFFICES

SHOPPING AND SERVICES

TYPE OF COMMERCIAL ACTIVITY

Complementary; supplementary

Independent
Independent; complementary to primary shopping
Independent; supplementary and competitive
Complementary; supplementary and competitive

Independent; seeks supplementary establishments
Independent; group with supplementary establishments
(Complementary or supplementary group); may be independent

PROBABLE ASSOCIATION
Complementary group; competitive

Not applicable

1-5

1-1/2-3

3-6 varies according to residential density

3/4-1-1/2

3/4-1

3/4-1-1/2

1/2-1

Radius (Miles)

Inter-regional traffic

10,000-

10,000-

20,000-

5,000-

5,000-

15,000-

2,000-

Source (Families)

Not applicable

3,000-

2,000-

10,000-

1,000-

1,000-

10,000-

1,500-

Minimum (Families)

Medium sized building; extensive accessory development

Medium to large size building and storage

Medium size building; large open display and storage

Extensive building

Building and possible open storage

Open and enclosed development

Small building

Small to medium size building

Typical Form

Produces noise and glare

Produces noise, Very low

Quiet to noisy; unmoderate vehicular

High traffic volume

Produces glare; can be unsightly

Creates glare and noise

Quiet

Produces glare and some noise

Usual Affect

Moderate vehicular easily identified access

PHYSICAL CHARACTERISTICS

MARKET AREA

TABLE IX-4
PHYSICAL CHARACTERISTICS OF VARIOUS
COMMERCIAL ACTIVITIES

purely of establishments typically of one economic category or physical grouping. For example, a community level office area often also includes shopping and service convenience establishments of a neighborhood level. Regional level commercial areas certainly contain community and neighborhood level establishments. This overlap among economic and physical characteristics in the commercial pattern generally progresses from lower to higher commercial levels. This means that although neighborhood shopping and services are often found within regional centers, the reverse is rarely true.

3. Commercial Development Standards

Table IX-5 summarizes the locational criteria and development standards for commercial land use for the Antioch planning area. Table IX-5 indicates the desirable and acceptable association of commercial activities and helps describe the characteristics of any given commercial area. Table IX-5 also indicates the desirable and accessible relationship of various types of commercial activities to the community street system and the specific desired standards in terms of the physical development of commercial uses. Table IX-6, page IX-26, indicates the desirable site standards for commercial uses. The desired physical arrangement of uses within a commercial area fall into four categories described as follows: Planned -- a completely integrated physical development with parking and other supplemental facilities provided in common; organized -- similar to planned, except that several uses within the area may function independently and require separate facilities; grouped -- a mixture of independent activities coordinated to the extent that a common density is established; and independent -- separate physical units. Independent uses may be coordinated with adjacent commercial developments. The physical development standards also indicate the desired relationship of various commercial activities with residential areas. This terminology describes the degree of physical compatibility of the commercial development with surrounding residential areas. Within would mean internally located in the residential area being served, while adjacent would mean located at the edge of a residential area with appropriate physical separation structures. Separated would indicate that the commercial uses should be located so that open space, other uses, or physical features intervene between

TABLE IX-5

LOCATIONAL CRITERIA AND DEVELOPMENT STANDARDS
FOR COMMERCIAL LAND USE

MARKET SCALE	TYPE OF COMMERCIAL ACTIVITY	POSSIBLE ASSOCIATION		RELATION TO STREET SYSTEM		PHYSICAL DEVELOPMENT	
		Desirable	Acceptable	Desirable	Acceptable	Arrangement Of Commercial Area	Relationship To Residential Area
NEIGHBORHOOD	SHOPPING AND SERVICES	Independent	Community Group	a/a	a/col	Planned	Adjacent
COMMUNITY	OFFICES	Community Group	Local Shopping	a/a	a/a a/col	Organized	Adjacent
	RECREATION	Community Group	Independent	a/a	a/a	Independent	Separated
	SERVICES	Community Group	Regional Group	a/a	a/a	Grouped	Separated
	PRIMARY SHOPPING	Regional Group	Local Shopping	a/a	a	Planned	Separated
REGIONAL	SECONDARY SHOPPING	Regional Group	Local Shopping	a/a	a	Grouped	Separated
	SERVICE	Independent	Regional Shopping	a/a	a/a a	Grouped	Isolated
EXTERNAL	TRAVEL SERVICE	Independent	Regional Service	FW/a	Major Business or Industrial Area	Grouped	Isolated

col -- along a collector street

col/col -- intersection of two collector streets

a/a -- intersection of two arterials

a -- along an arterial

FW/a -- intersection of freeway and arterial

the commercial and residential uses. Where separation is not possible in these cases, site arrangement and development must overcome possible adverse effects in residential areas. Finally, isolated uses, because of their nature, should be distinctly separated from residential areas. Rarely can the physical impact of these types of establishments be overcome by site arrangement and control of operation. These standards should provide the basis for approval of individual commercial uses within the overall framework established by this General Plan.

TABLE IX-6

COMMERCIAL USE

SITE AREA STANDARDS FOR COMMERCIAL CENTERS

<u>Regional</u>	<u>Community</u>	<u>Neighborhood</u>
40 - 150 + acres	10 - 40 acres	4 - 10 acres

I. INDUSTRIAL AREAS

1. Present Status

Until the late 1930's, Antioch's economy was primarily centered around agriculture. However, civic leaders encouraged industrial development in the belief that the community could not depend entirely upon agricultural production for its future economic security.

Community leaders recognized that development of a broad industrial base expands the local economy, stabilizes employment, generates tax monies which help support municipal services, and that industry's demands for municipal services are typically less than the requirements for other types of urban land use.

Many of the nations largest industrial corporations have built major plants and shipping facilities in and around Antioch, making the area an important industrial area in the northern half of the state. A combination of factors makes the area well suited to general industry.

The availability of thousands of acres of level and, in many cases, riverfront land is considered by city officials and business community leaders to be a major factor in attracting new industry to the area. In combination with excellent deepwater transportation, a large supply of skilled industrial workers, and an attractive, thriving community, the inventory of available industrial sites represents one of Contra Costa County's most important assets.

Major corporations with plants in the Antioch area include: American Bridge Division of U. S. Steel, Firebreboard Corporation, Crown Zellerbach Corporation, duPont Chemical Corporation, Kaiser Industries, Pacific Gas and Electric Company, Glass Container Corporation, Tillie Lewis Foods, Hickmott Cannery, and the Fulton Shipyard.

The land needs and site requirements of industry vary widely according to the type of plant, techniques of operation, and basic management policies of each individual company; however, contemporary industrial and community planning necessitate knowledge of the following factors:

- ° Industry will no longer be confined to sites that "can't be used for anything else". When management makes a substantial capital investment in plant facilities, it insists upon an appropriate site.
- ° Industrial uses prefer locations on or near major highways and preferably within an area planned for industrial use, so trucks and employees' cars need not travel through residential areas; and
- ° Industrial uses need adequate sized sites which permit the construction of an efficient, single-story production facility including sufficient off-street parking, space for expansion, landscaping and other amenities associated with contemporary site planning.
- ° Industrialists recognize the need for adequate zoning controls and performance standards which protect their investment from depreciation due to encroachment from non-industrially related land uses or the construction of substandard industrial facilities which detract from existing high-quality development.

Antioch's existing industrial districts are located as follows: (1) North of Atchison, Topeka and Santa Fe Railroad tracks adjacent to San Joaquin River, West Antioch; (2) West of Somersville Road between Pittsburgh-Antioch highway and north of Southern Pacific Railroad tracks; (3) North of Fourth Street, south of the San Joaquin River, west of "L" Street, in Central Antioch; (4) East of Hillcrest Avenue between Oakley Road and State Freeway 4; and (5) Along the Santa Fe Railroad right-of-way east of Cavallo Road between San Joaquin River and Wilbur Avenue in East Antioch.

2. Future Outlook

Industrial development in Antioch is a regional consideration influenced by existing land use and topographical patterns. Industrial planners evaluate a number of locations and select the site which best meets their varying and independent needs. A positive community attitude is an especially important aspect of industrial development. Successful industrial development requires a long-range and continued partnership between community and industry.

Future industrial development in the Antioch area is expected to parallel population growth. As Antioch continues to grow residentially, increased pressures will be generated to develop the city's planned industrial acreage for other urban uses. Almost without exception, prime land for industrial purposes is also prime land for residential and commercial use. The need for preserving a suitable volume of prime industrial land for future development requires consistently strong action on the part of local officials. Adequate amounts of prime industrial land should be reserved by zoning exclusively for future industrial use in the same manner that residential areas are protected from encroachment by incompatible uses; thus, giving good industrial sites the same protection given residential areas.

Protection of prime industrial land is not the entire criteria; however, site design and consideration for natural resources must be considered. To achieve maximum site design and protection of environmental resources requires flexibility of the strict land use and zoning regulations. IPC is an alternative to specific land use designation that can accomplish quality industrial development and protection of the environmental resources in critical areas.

J. INTEGRATED PLANNED COMMUNITY AREAS

The purpose of this land use designation is to provide for flexibility in the development, creative and imaginative design, and the development of parcels of land of coordinated projects involving a mixture of residential densities and housing types, industrial areas and related commercial activities. The integrated planned community area is further intended to provide for the optimum integration of urban and natural amenities within the area. The establishment of this land use classification gives the land owners and developers assurance that innovative and unique land development techniques will be given close and reasonable consideration for approval.

It is further recognized in establishing this type of land use classification that a need exists within the Antioch planning area for alternatives to traditional development. Changes in technology, the energy crisis, and life styles in general have produced demands for living arrangements that integrate recreation, housing and place of work. It is felt that this area offers such a unique opportunity for such a development. It must be stressed, however, that a specific plan for the area will be necessary when the area is ready for development and that very careful scrutiny must be given to the actual development of the area by the staff to assure that the overall goals and objectives of the General Plan are met.

Areas designated as IPC have the potential for flexibility and design due to the ownership of the land being minimal; because of its resources that are available within the area; and of its accessibility to public transportation facilities. This land use classification should be used strictly for the purposes of light industrial use or a combination of industrial, commercial, and residential uses. In each case, the environmental concerns regarding preservation of natural areas, as well as aesthetics, are taken into account when designing for development of this area.

Industrial uses would be oriented to light manufacturing, a planned industrial park, and/or a planned commercial industrial park. The second alternative is to orient the IPC with three land use classifications, each being compatible and complimentary in design to each other within the same neighborhood.

Residential should be provided with various housing types and any commercial in this classification should be limited to commercial type uses that are strictly supportive to neighborhood residential development. Open space and recreation should provide adequate buffering between the various types of uses, pedestrian circulation to and from the various types of uses, and adequate recreational areas for the residents created by the residential development.

K. INDUSTRIAL DISTRIBUTION

The Antioch General Plan sets forth the community's industrial land use policies and designates four separate geographical areas for industrial development in the planning area.

In most instances, boundaries for these coincide with existing industrial districts, State Highway 4, arterial highways, the San Joaquin River, and other natural or man-made features which serve to separate and buffer industrial areas from non-industrial areas.

Future industrial districts are designated on the General Plan in seven principal locations: (1) north of Pittsburg-Antioch highway, east of Standard Oil maintenance right-of-way and west of Somersville Road; (2) fronting lots on the east side of Somersville Road between Tenth Street and the Southern Pacific railroad tracks; (3) west of Somersville Road between Pittsburg-Antioch highway and north of the Southern Pacific railroad tracks; (4) north of Fourth Street, south of the San Joaquin River, and west of "L" Street; (5) east of Somersville Road, south of Fourth Street, and north of Tenth Street, west of "O" Street and north of Sixth Street, south of Fourth Street from "O" to "M" Streets; (6) along the Santa Fe railroad right-of-way, east of Cavallo-Fulton Shipyard Road, between the San Joaquin River and Wilbur Avenue in East Antioch; (7) east of Hillcrest Avenue, between Oakley Road and State Highway 4.

Areas 1, 4, a portion of 6, and a portion of 7 are designated for general industrial. Areas 2, 3, 5, a portion of 6, and a portion of 7 are designated for light industrial park complexes. The area north of Pittsburg-Antioch highway, south of Atchison, Topeka and Santa Fe right-of-way and west of Somersville Road, under the IPC classification, could also be used for light industrial purposes.

The allocated industrial area totals approximately 2,172 acres of which 575 acres are designated for light industrial complexes. The Plan includes the concept that riverfront or natural feature industrial areas should be planned to provide maximum accessibility to the river and natural features for public use and enjoyment and that implementing zones propose high quality performance standards to achieve a high level of environmental quality.

L. MAJOR LAND USE DEVELOPMENT POLICIES

1. The City may consider transferring densities within a designated neighborhood area. However, the maximum holding capacity established by the total density or densities in the neighborhood shall not be exceeded.
2. Those specific areas within a neighborhood designated on the General Plan as being capable of handling higher densities should be evaluated first when considering density transfer at the implementation state. If only one density has been designated for a neighborhood area and density transfer is considered for a specific location, then the following criteria should be kept in mind.

- (a) Existing land use;
 - (b) Physical limitations of the parcel or parcels;
 - (c) Community facilities available;
 - (d) Circulation pattern.
3. The area within the line of urbanization of Antioch represents moderate growth up to a population holding capacity of 60,000.
 4. The community of Antioch shall be developed on the basis of neighborhood service areas.
 5. The line of urbanization depicted in the Land Use Map shall serve as the boundary of the proposed urban area and future development shall not extend beyond such line.
 6. Within the time frame of the General Plan, future regional commercial development shall be limited to the existing County East Regional Shopping Center site and its adjacent commercial area.
 7. The City shall allow only neighborhood convenience centers south of Freeway 4 where such centers have been appropriately designated within neighborhood service areas.
 8. The City shall promote the development of the Central Business District as a speciality shopping area and encourage development of the downtown area as the cultural, entertainment and historical center for Antioch.
 9. The City shall promote the development of industrial parks along major circulation and transportation facilities.
 10. In cooperation with the Antioch School District, the City shall require the development of park sites adjacent to school properties whenever feasible and continue the requirement of housing developers to provide an appropriate area of their site for active open space, park and recreational use or the payment of "in lieu" fees.

11. The City shall provide an organized system of open spaces throughout the community by utilizing existing and proposed parks, utility easements, natural drainage areas, and those areas unsuited for urban development due to unsafe geological conditions and severe topographic features.
12. Future development adjacent to the San Joaquin River or other natural features shall be planned in such a manner to provide maximum accessibility to the river or natural features for public use and enjoyment.
13. The City shall retain the present predominance of single-family residences throughout the community and promote the development of smaller residential neighborhoods which have their own distinct identity.
14. The site for a future City Hall shall be located in the downtown area and be designed in conjunction with a community center to ensure adequate facilities for town meetings and events related to governmental and community affairs, recreational and cultural activities.
15. The City shall promote the development of federal, state, special district, county, and local governmental office facilities within the downtown area especially within or adjacent to the Central Business District to provide a further civic focus and revitalization effect.

M. ACTION PROGRAM

RESIDENTIAL

1. Residential neighborhoods should be zoned for a variety of densities with proposed residential areas allocated to predominantly low density residential development.
2. Residential densities should be decreased if the level of utility systems and street capacities are determined to be inadequate and cannot be upgraded for the subject area.

3. Residential development should be phased in so far as possible through zoning practices, maintenance of area of influence, subdivision review and annexation policy to follow the General Plan into the future as appropriate to timing and sequence of uses in order to maintain a compact urban form and service area.
4. Future schools, parks, churches and other public facilities should be conveniently located in all residential neighborhoods.
5. Design and construction of residential developments, which offer a variety of housing types, lot sizes, and complementary uses through creative and imaginative planning should be encouraged by zoning incentives and flexibility.
6. Hillside areas should be reserved for low residential density to retain the natural environmental features and amenities that contribute to the unique identity of each residential neighborhood by appropriate zoning provisions.
7. Any necessary expansion of the urbanization line, as indicated in the Land Use Map, should be done in the East Antioch area. This area, unlike South Antioch, would be less affected by urbanization since some development already exists.

COMMERCIAL

1. City officials and local merchants should develop programs to revitalize the Antioch Downtown Area.
2. Re-evaluate existing parking requirements to insure adequate off-street parking for all commercial levels. Create special parking districts where needed.
3. Consolidation of strip commercial zoning into planned commercial areas should be pursued.
4. Encourage the grouping of related, compatible uses into overall development complexes or in planned commercial areas through conducive zoning provisions and patterns.

5. Design commercial areas that include parking facilities as well as other facilities for alternative modes of transportation to and from the areas, including pedestrian, bicycle, transit and equestrian access.

INDUSTRIAL

1. Industrial zoning should be established in locations with easy access to major circulation facilities to minimize heavy traffic on local streets through planned residential and commercial areas.
2. Light Industrial zoning provisions should permit those industrial uses which emphasize (or are compatible with) warehousing, testing and research type uses or are controlled manufacturing uses with adequate performance standards.
3. Strict environmental performance standards (i.e., smoke, noise, odor, etc.) should be developed to insure that industrial plants do not cause undue nuisance to residential and commercial facilities in the immediate vicinity or community whole.

INTEGRATED PLANNED COMMUNITY AREA

1. Zoning for this land use should be developed and established in areas where parcel ownership is minimal; natural and man-made resources are prevalent; where accessibility to major transportation is available; and where the area contains a minimum of 200 acres.
2. Uses should be limited to light industrial which do not cause undue nuisance to residential use or a combination of industrial, commercial, and residential.

X

HOUSING ELEMENT

A. INTRODUCTION

In 1969, the California Legislature made it mandatory that all cities and counties prepare and adopt a Housing Element as a portion of their General Plans. The Housing Element, required by Government Code Sections 65302 and 65303, must be consistent and compatible with the other General Plan elements.

In general, Government Code Section 65302(c) stipulates that local governments must adopt "...a housing element consisting of standards and plans for the improvement of housing and provision of adequate sites for housing... this element of the plan shall endeavor to make adequate provision for the housing needs of all economic segments of the community."

The Housing Element of the General Plan is designed to determine housing needs for present and future populations of Antioch and to provide a comprehensive guide of policies and programs for the development and improvement of residential areas.

B. INTERGOVERNMENTAL COORDINATION

Involvement of all local jurisdictions in the Housing Element planning process is necessary due to the regional nature of housing problems. The Housing Element is an ongoing plan to continue intergovernmental coordination efforts.

1. Major metropolitan areas require a regional or multi-county approach. In some instances, a single county will cover a housing market. Cities that comprise part of a housing market should jointly prepare and coordinate Housing Elements with the county.
2. Counties that are situated in a multi-county housing market should prepare and adopt a Housing Element based upon and within the context of a regional Housing Element.
3. In order to avoid irreconcilable differences between the regional and/or county housing plans, the cities and counties within a region should make significant inputs into the regional plan process.
4. There is a need for "city-to-city" and "county-to-county" coordination and cooperation to share the responsibility for housing all segments of the population.

C. RELATIONSHIP TO OTHER GENERAL PLAN ELEMENTS

According to the California Council on Intergovernmental Relations "General Plan Guidelines", a Housing Element will not advocate goals and plans that are foreign to the other General Plan elements. A simple statement made in the form of an objective to be accomplished through the housing plan may well imply policy determination in other General Plan elements. Housing implies people and people require services; therefore, other General Plan elements are reviewed and any inconsistencies or incompatibilities resolved. Among the more important elements which are closely correlated with the Housing Element are:

- | | | | |
|---|-------------|---|----------------------|
| ° | Land Use | ° | Open Space |
| ° | Circulation | ° | Community Facilities |
| ° | Recreation | ° | Conservation |
| ° | Noise | ° | Seismic Safety |

Throughout the General Plan, individual elements interact to create intricate relationships which are only sustained by the broad perspective and understanding of such inter-relationships. The Siesmic and Geologic Hazards, Environmental Resources Management (Open Space, Conservation and Recreation) and Noise Elements all assist in defining and delineating those areas appropriate for potential development. The Housing Element responds to the broad perspective as detailed herein and results in an impact on the Land Use Element regarding residential land use allocations. The Circulation, Community Facilities and Community Design Elements concern themselves with the capacity to serve and maintain a community as proposed by the General Plan. These are but a few of the relationships; however, they demonstrate the interlocking nature of the individual elements.

D. SUMMARY OF FINDINGS

1. Antioch is a fast growing residential community with a predominance of single family, owner occupied housing units. It is the fastest growing city within Contra Costa County as the population has increased from 17,300 in 1960 to 28,060 in 1970, to 31,150 in 1972, to 32,350 in 1974. The physical growth of Antioch is occurring toward the east and south. In these new areas of housing development, large subdivisions are developed with almost exclusively detached single family, owner occupied units. Only a small amount of multipl family housing units, in the form of townhouses, are developed in these areas.
2. The existing housing stock of Antioch is in good physical condition according to the 1970 U. S. Census of Housing and the special housing conditions survey (Refer to "Housing Fact Sheet" 1972). The census establishes indices for overcrowding; low housing value, low rent, lack of complete kitchen facilities and inadequate plumbing. Utilizing these census indices, Antioch housing rates high as only 74 of the

total 8,855 units contained more than 1.51 persons per room; only 1.9 percent of the units were valued below \$10,000; only 50 units lacked complete kitchen facilities; only 42 units lacked one or more plumbing facilities; and only 322 units rented for less than \$59 per month. A special 1972 survey classified the condition of residential buildings (not housing units). The category in which a building was placed related to the nature and cost of needed improvements. If only normal maintenance was required, the structure was considered "well maintained." If only a few minor repairs or one major repair were observed to be necessary, the structure was considered "standard." Structures in need of more than one major repair or one major repair in addition to a number of minor repairs were placed in the third category, "extensive maintenance needed."

According to this survey, 78.6 percent of the units were well maintained, 16.4 percent were standard and 5.0 percent were in need of extensive maintenance.

3. The 1970 Census shows that the City of Antioch supplied some of the least expensive and lowest rent housing in the County. In 1970, the average value of a single family, owner occupied house was \$20,133. Antioch's position in the County in regard to the cost has not significantly changed since 1970. However, the average value of housing has increased dramatically to approximately \$30,000. This represents an increase of 49 percent in housing costs. Some small, low cost housing can still be found in the older residential areas.
4. Ability to pay for housing may cause some problems for lower income families. If the present average value of housing in Antioch is \$30,000, a family would theoretically have to have an annual income of \$13,200 to afford to buy a home (figuring that a family should not spend more than 25 percent of its gross annual income for housing. Although a majority of Antioch residents may be able to afford to purchase a home in the community, approximately 40 percent would be unable to afford purchase of a new home. It is highly probable that the discrepancies between costs and the ability to pay will increase considerably because:
(1) the cost of land will increase as land becomes

more scarce; (2) increasing costs of labor and building materials and (3) the increasing high interest rates for building loans.

The most dramatic indication of a deficiency between the cost of housing and housing need is the number of applications waiting for housing with the Housing Authority of Contra Costa County (Refer to Tables X-1 and X-2).

5. The Community Attitude Survey conducted as part of the Antioch General Plan process showed that 80 percent of the respondents indicated a preference to purchase a home rather than rent or lease, if they were to move. The single family home was a definite preference in mode of living with a 95 percent favorable response and a secondary response favoring low density cluster development. The income information from the survey was as follows and compares favorably with the 1970 U. S. Census.

<u>Income Levels</u>	<u>Percent of Respondents</u>
0-5000	11.3
5001-8000	10.8
8001-12000	38.1
12001-15000	18.3
Over 15000	18.3

TABLE X-1

LOCAL SURVEY OF UNMET NEEDS
OF LOWER-INCOME PERSONS

Antioch, California

1. Survey County Planning Department (December 1974)
Housing Assistance Needs of Lower-Income*Households

Total	3004
Elderly & Handicapped	1172
Non-Elderly	1832

2. Caseload Social Service Department (9/27/73)

Total	2174
Elderly & Blind	618
All Other	1556

3. Program of County Housing Authority (Section 23)

Currently Housed Total (12/74)	264**
Elderly & Handicapped	95
Non-Elderly	169
Active Requests from Eligible Low-Income Total	518
Elderly & Handicapped	124
Non-Elderly	394

* 80% of median is \$10,000

** 204 Leases expire in next year

TABLE X-2

NUMBER OF APPLICANTS TO THE HOUSING AUTHORITY
OF CONTRA COSTA COUNTY

<u>Applicants</u>	<u>Number of Persons Per Family</u>	<u>Number of Bedrooms Needed</u>
104	1-3	1
246	2-5	2
171	4-8	3
11	6-10	4
<u>1</u>	8-11	5
533*		

* About one-half of the applicants are presently residing in Antioch. The other half live in the vicinity of Concord, Pittsburg, Oakley and Brentwood.

Source: Contra Costa County Housing Authority, 1973.

CONCLUSIONS

1. Certain steps should be taken to safeguard the quality of the residential environment in the years ahead and to eliminate the monotony and uniformity, usually common, of single-family residential development. This subject is discussed more in depth in the Community Design Element.
2. Possible housing problems may result due to increases in the discrepancy between the cost of housing and the ability to pay.

E. STATISTICAL INVENTORY

The California Council on Intergovernmental Relations (CIR) "General Plan Guidelines" of September, 1973, require that local Housing Elements should contain an inventory of existing housing conditions. The inventory should include such aspects as type and size of housing units, ownership, condition, location, neighborhood, number of rooms, monthly rent, substandard units, services, as well as such socio-economic aspects as income, family size and race. The following tables, X-3 through X-9, were adapted from the 1970 U. S. Census of Housing, Detailed Characteristics:

TABLE X-3

HOUSING CONDITIONS

<u>Type of Housing</u>	<u>Well Maintained</u>	<u>Standard</u>	<u>Extensive Maintenance Needed</u>
Single Family	6,300	1,216	331
Two-Family	143	109	50
Multiple-Family	240	62	37
Other	6	5	8
TOTAL	<u>6,689</u>	<u>1,392</u>	<u>426</u>

TABLE X-4

FAMILY INCOME

<u>Family Income</u>	<u>Antioch</u>		<u>County %</u>	<u>State %</u>
	<u>No.</u>	<u>%</u>		
Under \$5,000	915	12.3	11.5	16.8
\$5,000 - 9,999	2,158	29.0	22.6	28.5
\$10,000 - 14,999	2,740	36.8	31.0	28.0
\$15,000 and up	1,633	21.9	34.8	26.7
Median	\$10,972		\$12,423	\$9,000

TABLE X-5

HOUSING TYPE

<u>Housing Type</u>	<u>Antioch</u>		<u>County %</u>	<u>State %</u>
	<u>No.</u>	<u>%</u>		
Single-Family	7,228	81.6	77.5	67.0
2-4 Units	660	7.5	8.9	10.2
5 or more	956	10.8	11.5	20.0
Mobile Home	11	0.1	2.1	2.8

TABLE X-6

OWNER/RENTER TENURE

<u>Tenure</u>	<u>Antioch</u>		<u>County %</u>	<u>State %</u>
	<u>No.</u>	<u>%</u>		
Owner Occupied	5,824	65.8	67.3	54.9
Renter Occupied	2,769	31.3	29.7	45.0
Vacant	262	2.9	3.0	0.1

TABLE X-7

AGE OF HOUSING

<u>Year Structure Built</u>	<u>Antioch</u>		<u>County %</u>	<u>State %</u>
	<u>No.</u>	<u>%</u>		
1960-March 1970	3,477	39.3	36.6	31.3
1950-1959	2,304	26.0	31.6	29.1
1940-1949	1,675	18.9	18.3	15.9
1939 or earlier	1,399	15.8	13.5	23.7

TABLE X-8

HOUSING SIZE

<u>Number of Bedrooms</u>	<u>Antioch</u>		<u>County %</u>	<u>State %</u>
	<u>No.</u>	<u>%</u>		
0	43	0.4	1.4	4.5
1	929	10.5	11.3	20.5
2	2,731	30.8	31.2	34.0
3	4,122	46.5	40.3	30.7
4 or more	1,045	11.8	15.8	10.3

Number of Bathrooms

1	5,223	59.2	52.0	60.0
1-1/2	671	7.6	8.8	9.8
2	2,664	30.2	30.0	22.0
2-1/2	85	.9	4.7	3.4
3 or more	52	.6	3.1	2.8
None	124	1.4	1.4	2.4

TABLE X-9

MONTHLY RENT

<u>Gross Rent</u>	<u>Antioch</u>		<u>County %</u>	<u>State %</u>
	<u>No.</u>	<u>%</u>		
Less than \$50	34	1.2	1.6	2.6
\$50 - 99	854	31.2	21.8	27.2
\$100 - 149	1,253	45.8	34.6	38.6
\$150 - 199	447	16.3	26.7	21.8
\$200 or more	78	2.8	12.5	9.8
No Cash Rent	70	2.6	2.7	3.4
Median	\$116		\$137	\$126

F. GOAL

It is the goal of the City of Antioch to preserve and enhance the community's residential environment by maintaining and improving the visual character and physical quality of both housing and supportive community facilities and by encouraging the development of a variety of housing types to adequately serve the needs of present and future residents of the community.

G. OBJECTIVES

1. The City shall retain the present predominance of low density residential development throughout the community and offer housing types and lot sizes which will satisfy a diversity of housing needs.

2. The City should encourage the development of a variety of neighborhood patterns and housing mixes in order to offer alternative housing environments to meet a variety of life styles and incomes.
3. All new housing developments should include landscaping, open space, parks and recreation features and other design amenities to meet high standards of environmental quality.
4. The City should actively encourage the conservation, maintenance and improvement of existing residential neighborhoods in order to maintain optimum local standards of housing and environmental quality and design.
5. The City should facilitate the development of a full range of community services and facilities which make it possible for each resident to enjoy a safe, healthful and attractive living environment.
6. The City should insure "open housing" opportunities for all persons to purchase or rent adequate housing facilities of their choice, regardless of their age, sex, race, creed or color.
7. The City should participate in programs with other local and regional agencies and private firms to identify housing issues and assist in solving housing problems which affect the City and the region.

The goal and objectives of the Housing Element for the City of Antioch are coordinated with and are related to those of the State of California, Association of Bay Area Governments and Contra Costa County, as part of Antioch's effort to meet its housing needs. The goals of Housing Elements as expressed by the Council on Intergovernmental Relations include:

1. To promote and insure the provision of adequate housing for all persons regardless of income, age, race of ethnic background.

2. To promote and insure the provisions of housing selection by location, type, price and tenure.
3. To promote and insure open and free choice of housing for all.
4. To act as a guide for municipal decisions and have these decisions affect the quality of the housing stock and inventory.

There are two general messages conveyed here. The first is that local jurisdictions are to be held responsible for ensuring that housing is made available for all persons on an equal basis. This effectively prohibits local policy directed at eliminating certain groups in order to create a "one class" community. Integration, on an economic as well as racial basis, is thus mandated in order to break up existing exclusionary housing patterns. Legislation requiring a Housing Element was passed, to a large extent, in response to demands of developers who argued that they were being prevented from serving the market by unjust local practices including large lot zoning, uneven code interpretation and a maze of administrative hazards.

The second message in these guidelines is that the approach taken by local jurisdictions in facing this issue is to be determined by those jurisdictions. Local jurisdictions are closest to the problem and they can deal most effectively with their unique situation. The implication is that the State will not interpose its presence in a situation which can best be defined and handled by other levels of government, and that the State will not intrude in local affairs if the City will take care of its problems and cooperate in solving those which cannot be defined according to City boundaries.

H. OBSTACLES

There are obstacles which prevent the aforementioned housing goals from being attained. These obstacles involve issues which go well beyond the boundaries and jurisdiction of Antioch, while many of them have implications which go far outside the realm of "housing." Some of the obstacles to better housing to be discussed, which are of primary importance, are categorized in terms of (1) institutions and procedures, (2) resources and (3) attitudes.

1. Institutions and Procedures

Institutions are defined as any public agency or factor involved in housing production and use. Housing institutions are themselves complicated as they have an impact on how well the mechanism works.

Local governmental agencies lack sufficient jurisdiction to achieve a unified approach to a housing market because the area within which consumers seek housing alternatives is not defined by city boundaries. This creates an obstacle in achievement of goals because the housing market is affected by conditions and actions beyond the control of the local decision-makers.

Another problem is the large number and segmented nature of local governmental agencies involved in a regional or area wide housing market. Because jurisdictions are often placed in competition to capture desirable development, they may be tempted to relax standards in order to obtain a short-term advantage by attracting a given type of development. However, more often local jurisdictions tend toward exclusiveness as they develop policies which are restrictive in nature on the housing market. The attitude is that certain consumers must find opportunity elsewhere.

Few attempts at cooperation in an entire housing market have met with success. This creates an obstacle because regional agencies are necessary to deal with regional market issues. Information about regional trends is often missing. Normally, one might expect such data to be provided by a group with a regional orientation; but lacking such a group, an obstacle of inadequate information comes into being. This lack of up-to-date, accurate data is often noted as a major problem in establishing demand for housing. Tax agencies are often cited as having major impact on housing, and tax structures provide additional obstacles. Local jurisdictions face the dilemma of needing an adequate tax base. Development increases the property tax base, but it also increases the demand for services. Low income housing faces an obstacle in this regard. The demand for services is substantial, but the revenue derived from such housing is minimal.

The property tax structure is often cited as an obstacle in itself, because it discourages property improvement. Remodeling or making an addition results in higher taxes and this discourages property owners from doing such things. The argument is made that the property tax should be revised to reward improvement rather than penalize it. Another aspect of the property tax structure is the burden it imposes on low income property owners who are taxed on the realty they own instead of on the income derived from it. Once again, however, the solution to this obstacle necessitates broader scope than held by a single local community.

Income tax provisions are perhaps less known as determinants of housing form, but there is some evidence that intricacies of the write-off and depreciation provisions of the law induce housing investment without the usual concern for supply and demand.

These tax considerations, however, are beyond the realm of the City of Antioch. The City, by itself, can do little to effect change. These tax considerations do provide examples of areas in which the City must attempt to influence other levels of government if it is to attain its goals.

2. Resources

Housing opportunity has been most drastically changed due to the rapid increase in housing costs. Land costs and building costs have both sky-rocketed, which has made it virtually impossible for most families to obtain new housing. In addition, interest rates have also risen resulting in additional financing costs. These obstacles are widely recognized and are reflected in housing costs in Antioch.

Low income housing, to be made available, would necessitate state or Federal governmental funding or assistance as city government is not in a position to begin such a program. Such programs have usually been the responsibility of the Federal government. But the obstacle here is that the Federal programs have not been funded to a level to permit them to deal effectively with the housing problems of the nation.

Neither of these obstacles (increased housing costs and lack of Federal funding) are within easy control of City government. Attempts to cut costs by the elimination of certain City requirements have shown little evidence of drastically altering housing economics. Federal funding levels are determined in the context of national priorities, and it is difficult for a local jurisdiction to bring pressure to bear at the Federal level.

3. Attitudes

Broad public attitudes concerning housing policy are reflected throughout the discussion of Institutions and Procedures and Resources. There are very few strong regional agencies because people prefer to attempt to find solutions to problems at a local level. The idea of local "home rule" persists as there is a concern of government becoming too far removed from the people. There is hesitation about government intervention because of the distrust of institutions which do not stand the test of the market and a fear of the loss of individual freedoms.

Popular rejection of the need for dispersed low income housing opportunities is also well-known. This rejection can sometimes be traced back to a fear of inundation by the poor or minority groups and the fact that suburban development is usually oriented to one-class communities. It is possible in such communities to lose sight of the fact that metropolitan areas must necessarily involve a full-range of people and opportunities.

Also, it must be recognized that land has often been viewed from an investment viewpoint rather than from a concern for the environment. Attempts to improve the quality of the residential environment are severely limited by this obstacle, and they are likely to remain so unless community attitudes change.

I. HOUSING NEEDS AND ALTERNATIVES

The specific dimensions of the situation can best be understood by focusing on the needs of lower income households. Among lower income groups, discretionary spending is limited. If housing costs are unreasonably high, money will have to be diverted from the other necessities of life. Needs are defined in terms of those households reporting they spent more than the norm for housing (rents more than 25 percent of monthly income for renters or home values more than 2.5 times the annual income for homeowners).

If these figures can be taken as approximations, it can be seen that a high percentage of Antioch's families earning less than \$10,000 a year would have difficulty affording to buy new housing which costs in excess of \$25,000. Among these families a substantial number really require some form of incentive or assistance if they are to be adequately housed. Housing must be provided for all family income ranges in order to eliminate disproportionate spending of income by low income families.

It is necessary to combat the monotony and uniformity of urban sprawl expansion now occurring in Antioch. This concerns not only the style and type of housing, but the value and size of housing to be developed. Diversity in design, type, value and size is necessary to allow for a free market choice of housing. In order to combat urban sprawl in Antioch and minimize monotony and uniformity in residential growth, the following actions should be effectuated:

1. Preserve geographic and natural resources.
2. Encourage cluster or planned residential development.
3. Retain natural topography.
4. Provide contiguous open space areas.
5. Increase residential densities around existing community centers (downtown area and regional shopping center).

6. Concentrate urban functions in distinct compact districts (commercial, industrial, governmental, etc.)
7. Support community cleanup and beautification campaigns.
8. Pursue new development in blighted areas which cannot be upgraded.

A potential alternative to the high cost of home ownership is the provision of a variety of other types of designed or constructed homes. This would include site layout designs to take advantage of savings in grading or drainage costs, the extent of public improvements required, utility groupings, or similar cost items by clustering or grouping homes in patterns conducive to more economical construction. Also, the use of either cost saving construction techniques or materials would be encouraged to the extent compatible with good housing quality. New technologies of manufactured housing are still in a refinement process; however, modular or prefab housing can be less expensive than conventional construction.

J. HOUSING DEMAND PROJECTIONS

The demand for housing in Antioch is affected by those trends going on in the expanding regional urban environment in which the City exists today. Antioch does not exist in isolation, but is rather a single urban area in a group of interlocking urban areas which together form a subregional housing market of Contra Costa County.

For purposes of this demand analysis, population projection figures used were based upon phased development of the ultimate holding capacity of Antioch Planning Area. As with any projections, one must be aware the validity of the projection decreases the farther one gets from the benchmark. With this in mind, figures presented in Table X-10 for the years 1980, 1990 and 2000 should be treated with increasing caution.

TABLE X-10

HOUSING DEMAND PROJECTIONS
FOR THE ANTIOCH PLANNING AREA

<u>Year</u>	<u>Population¹</u>	<u>Percentage Distribution²</u>		<u>Total Units Needed</u>
		<u>Low & Medium Density</u>	<u>High Density</u>	
1970	28,060	82	18	8,855
1980	37,000	83	17	11,690
1990	48,840	84	16	15,430
2000	60,000	85	15	22,150

¹Based on Land Use Element Holding Capacity projections and an approximate 3.2 percent annual growth rate.

²Based on Land Use Element.

Source: U. S. Census of Housing, 1970.
Lampman and Associates, 1974.

K. HOUSING DISTRIBUTION

Housing location is important in allowing free market choice and proximity to employment, schools, shopping, and other services. New housing development locations are proposed in a manner to be consistent with other elements of this Plan. Prime agricultural lands are proposed to be preserved, although they are attractive locations for future residential development. Areas of steep terrain and poor drainage also provide development constraints for future housing in the Antioch area. The General Plan proposes to accommodate a reasonable population growth while preserving key environmental resources and features in the Antioch area, including natural drainage areas, prime agricultural lands, steep

lands, marsh lands and lands with hazardous potential. Future new housing development in Antioch is proposed in the following general areas (Refer to Land Use Map included in pocket at end of Plan).

1. South of Buchanan Road and west of Somersville Road is proposed for low density residential development.
2. East of the existing dump facilities between Paso Corte Road and the Contra Costa Canal is planned for low density residential.
3. The area east of Hillcrest Avenue and south of Highway 4 is planned for low density, 2 dwelling units per acre and some medium high density.
4. Northeast of Lone Tree Way extension, south of the Contra Costa Canal and west of the future extension of Hillcrest Avenue is strictly proposed for low density housing.

L. ACTION PROGRAM

The following are recommended in order to implement this element:

1. Pursue compatibility between housing policies of this General Plan Element and regulatory devices available in the zoning ordinance.
2. Initiate a systematic "Code Enforcement Program" and seek financing for improvement of areas of marginal housing deterioration.
3. Minimize design monotony and layout uniformity in housing development by flexibility through increased use of the Planned Development Zone. Establish zoning provisions to preserve geographic and natural resources, retain natural topography and provide contiguous open space areas.

4. Require the submittal of a complete grading plan in connection with all proposed housing developments in order to provide sufficient information for a full environmental impact assessment on the proposed project.
5. Continue to meet the low and moderate cost housing needs of the City through the use of public, private and/or joint public-private action; offering assistance to developers of low or moderate cost housing by providing necessary information and other available means. Low income housing shall not be concentrated in any one area and any housing, no matter what income group it is intended to serve, must have adequate community facilities available and meet the overall environmental goals of the community.
6. Encourage a program to allow housing for community needs for the fixed income and/or elderly. This program could be warranted in connection with efforts to revitalize the downtown area of Antioch.
7. Adhere to the standards and recommendations of the most current Uniform Building Code and amend as necessary to insure sensitivity to unique local conditions.
8. Develop programs for neighborhood conservation and rehabilitation. Efforts should be directed to:
 - a. Identify and assist responsible leadership groups within the neighborhood.
 - b. Encourage neighborhood participation, especially when action on neighborhood problems arises.
 - c. Identify the needs and desires of the neighborhood as they change over time and respond accordingly.

9. Instruct staff to investigate ways of meeting housing needs of low and medium income families, including impact of local ordinances and development regulations on both new construction and rehabilitation.
10. Influence other levels of government in resolving major obstacles to the provision of housing, including tax reform and Federal budgeting.

XI

CIRCULATION ELEMENT

A. INTRODUCTION

Transportation facilities have historically played a key role in the development of cities. Thus, an adequate system of streets is vital to the continued orderly growth of Antioch. A circulation system is one of the major aspects of a General Plan, providing primarily for the vehicular movement of people and goods, and is intimately related to the use of the land. The uses of land generates the traffic as people drive, for example, from home to work or home to downtown. On the other hand, streets generate land uses, too. When a road is built or improved, making a place more accessible, houses and businesses are quick to follow. This is evidenced by the way many cities form long fingers of development along the highways.

There are five levels of circulation indicated on the Antioch General Plan: mass transit, freeways, arterials, collectors and local streets. These last four levels generally indicate the order of importance of the roads and the order of the volumes of traffic they should be expected to carry. In addition to street facilities and transit, other transportation facilities include the Southern Pacific and Sante Fe railroads, the San Joaquin River and the Antioch Airport.

B. GOAL

It is the goal of the City of Antioch to insure the orderly development of those facilities which promote the safe, resource conserving, attractive, convenient and economical movement of people and goods within the Antioch area; to insure the development of all such facilities in a manner which will minimize any detrimental effects upon the environmental quality of the City; to provide for public safety; and to assist in the development of a total circulation system to serve the present and future needs of the City, Contra Costa County and the greater San Francisco Bay Area.

C. OBJECTIVES

1. The local transportation system should serve as an integral part of the broader regional transportation network, including a balance between various alternate modes of transportation such as highways, mass transit, air, rail and water facilities that will satisfy local and regional transportation needs and the needs of various age and socio-economic groups.
2. The City should continue the active investigation of all planned local and regional transportation systems to determine the impact of each on the community, and to insure that all such facilities serve to protect and maintain the sociological, ecological, economic and aesthetic environment of the Antioch area.
3. Freeways, railroads and major streets, in particular, should not bisect or isolate individual communities, neighborhoods, the City and business areas, parks or other homogeneous areas.
4. The City should limit and control the distribution, character and intensity of all land uses which would generate increased levels of traffic beyond the capacity of the existing or planned street system.

5. The present location and size of the Antioch Airport is unacceptable as a site for an eastern Contra Costa County small craft airport facility and should, therefore, be restricted to its present function and level of operation as a recreational field for small privately operated business and pleasure type aircraft.
6. The City should also promote and assist other agencies in planning for an alternative airport site which would adequately serve the flying needs of the greater eastern Contra Costa County area. In this regard, the City should insure that adequate regulations and controls be developed to reduce the levels of noise, pollution and other hazards associated with the operations of the existing or any future alternative airport.
7. The City should cooperate in the planning and development of a local and regional mass transit system with other appropriate agencies, where such system may best serve the rising demand for adequate and efficient transportation systems.
8. Any mass transit system and the various local support facilities, should each be designed and operated so as to protect and enhance the physical, economical, social and ecological environment of the Antioch area.
9. The City should develop and maintain suitable and adequate regulations to assure the provision of sufficient off-street parking with all new developments and encourage joint public-private efforts to improve parking and circulation conditions in existing developed areas.
10. The City should insure the provision of adequate sidewalks and other pedestrian ways and assist in the development of a bicycle, hiking and equestrian trail system throughout the City.

D. POLICIES

1. In cooperation with the regional mass transit system, the City shall promote the development of a transit line and station within the city limits of Antioch.

2. The line of urbanization depicted on Figure III-3 shall serve as the most southerly boundary of the proposed urban area and future development shall not extend beyond that line.

E. EXISTING CONDITIONS

In addition to the San Joaquin River, which borders the north end of town near the downtown area, transportation facilities serving this community include Highway 4, which is built to full freeway standards, and the Southern Pacific and Santa Fe Railroads, which traverse through Antioch on separate trackage. Train movements are limited on the Santa Fe which proceeds through Antioch adjacent to the river. However, the Southern Pacific line carries major train movements and is south of the downtown area, north of and somewhat parallel with the freeway.

Because the freeway goes through Antioch in an east-west direction and is over a mile south of the downtown area, much of the surface street circulation needs are north-south arterials connecting with the freeway. Such streets include Somersville Road, L Street, G Street, A Street and Hillcrest. Somersville, A Street and Hillcrest are full directional interchanges, while G Street and L Street directly serve freeway traffic to the west only. It is interesting to note that while G and L Streets are not full-service interchanges, they are the only two streets in the City of Antioch that are grade separated with the Southern Pacific Railroad.

The freeway is located such that it bisects the City of Antioch and separates the older and newer portions of the City. There is a considerable amount of subdivision development in Antioch on the south side of the freeway. For identification purposes, A Street south of the freeway becomes Lone Tree Way and L Street becomes Contra Loma Boulevard.

Major east-west arterials include Tenth Street and Wilbur Avenue, which is a continuous route through Antioch, except for the sizable jog which exists at A Street where the two mentioned streets each form a tee intersection with A Street. The Tenth-Wilbur arterial served as a State highway through Antioch prior to development of the freeway and links Antioch with Pittsburg, the sister city of comparable size to Antioch located about five miles westerly. Other existing east-west arterials include Eighteenth Street, Buchanan Road and Tregallas Road. Paso Corto Road also is an arterial in the southern part of the City; however, it is relatively unimproved and as yet does not carry much traffic.

In addition to the major streets, there are a number of collectors handling many of the existing traffic needs in the City. These include the westerly portion of Eighteenth Street, the northerly portion of Hillcrest Drive and Cavallo Road north of the freeway. Also, Fourth Street, which is the major east-west street in the downtown area, serves as a collector street. South of the freeway, collector streets include Delta Fair Boulevard, Putnam Street, Gentrytown Drive, Worell Road, Garrow Drive and Longview Road. Because of extensive subdivision construction in the southern portion of the City, there is not good continuity between arterials and collector streets as much of the street work is yet to be completed. For this reason, quite a few miles of arterial and collector streets are unimproved or only partly improved in the southern end of the City. Between the freeway and river, street widening is needed, both for streets where the curb width is too narrow and also where curbs and sidewalks do not now exist. (Refer to Circulation Plan, Figure XI-1)

F. STANDARDS AND CLASSIFICATION OF FACILITIES

No single class of street can be expected to serve all types of demand. A well-balanced major street and highway system must include various classes of major route facilities, each designed to serve a particular function. They are usually classified as follows:

1. Freeways and Expressways

Freeways are divided highways with full control of access and grade separations for all intersecting traffic flows. There are no intersections at grade, traffic signals, pedestrians, or parking on freeways to interfere with the continuity of high-capacity, high-speed traffic flow. They also provide for the rapid and safe movement of large volumes of traffic over relatively long distances. Expressways are partially developed freeways on which some or all intersections are not grade separated.

2. Arterials

Arterials are the major streets which serve large volumes of through traffic between different sections of the urban area and provide access to the freeway and expressway. While arterial streets may serve abutting properties, their primary function is to provide for through traffic movement. A properly developed major arterial system will help define residential neighborhoods, not serve as direct access for them. They should also be of sufficient capacity to prevent the undesirable diversion of through traffic to local streets.

3. Collector Streets

Collector streets connect residential neighborhoods or other areas of homogeneous land use with arterial streets. They serve a dual purpose by providing a means for through traffic movement within a limited area and giving direct access to abutting property. The design of collector streets is properly a part of good neighborhood planning. They should be planned so as not to attract large volumes of through traffic nor to disrupt the areas they serve.

4. Local Streets

These streets are used primarily for access to residential, commercial, industrial, or other abutting property; and all through traffic should be discouraged. As local streets are generally more pedestrian oriented, the planning of these streets should respect this fact.

(Standards for these facilities are shown in Figures XI-2 and XI-3.

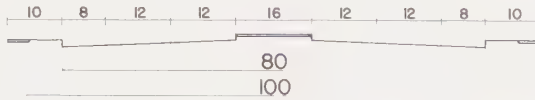


RESIDENTIAL

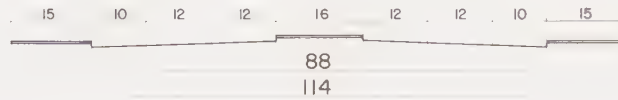
COMMERCIAL

INDUSTRIAL

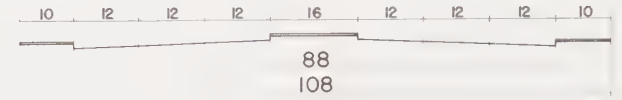
MAJOR ARTERIAL STREETS



MAJOR ARTERIAL STREETS



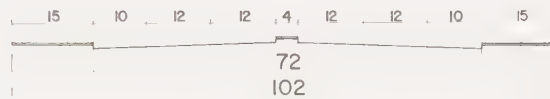
MAJOR ARTERIAL STREETS



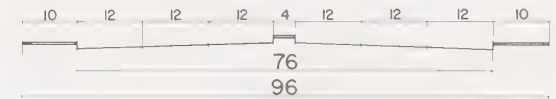
ARTERIAL STREETS



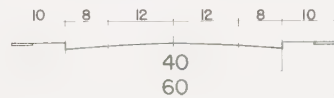
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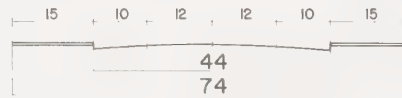
ARTERIAL STREETS



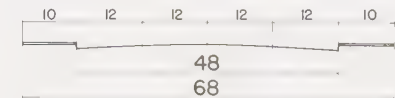
COLLECTOR STREETS



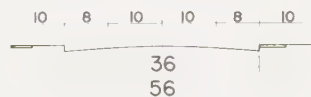
COLLECTOR STREETS



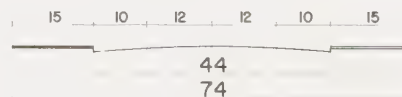
COLLECTOR STREETS



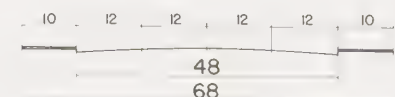
LOCAL STREETS



LOCAL STREETS



LOCAL STREETS

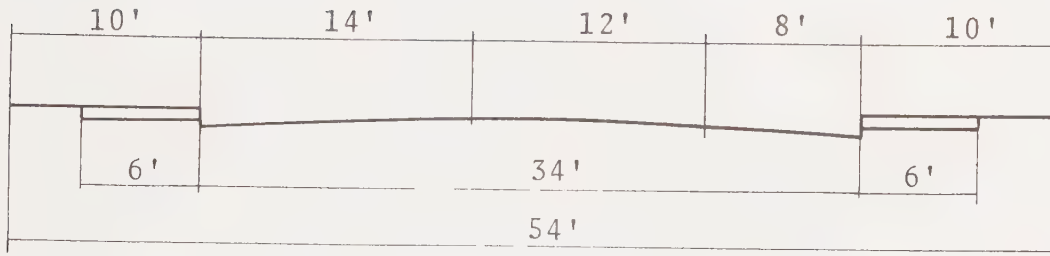


MASTER STREET SECTIONS

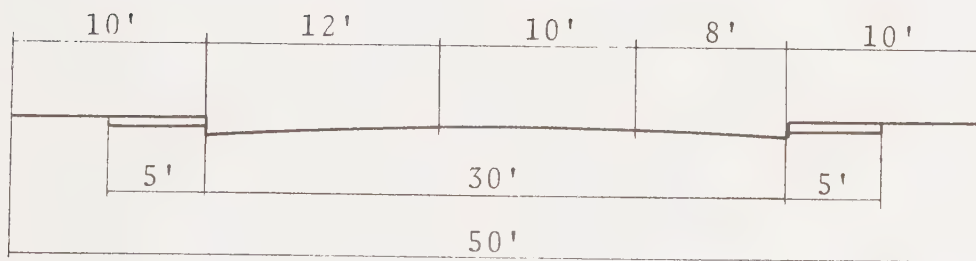
FIGURE XI-2

CITY OF ANTIOCH
MODIFIED MASTER STREET SECTIONS
FOR HILLSIDE DEVELOPMENT

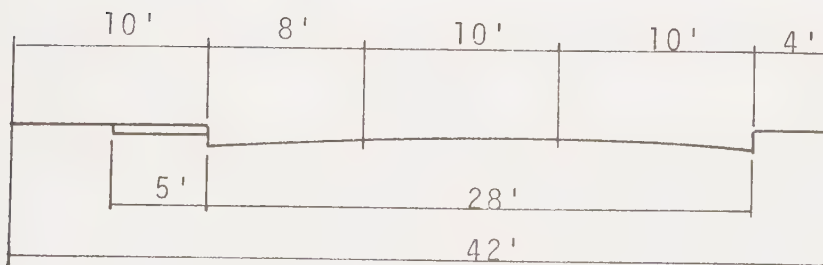
FIGURE XI-3



COLLECTOR



LOCAL - ACCESS ON BOTH SIDES



LOCAL - ACCESS ON ONLY ONE SIDE

G. TRANSPORTATION NEEDS

There are varying traffic improvement needs for the City of Antioch. The most critical seems to be completing the arterial street system. Because the freeway bisects the center of the City, along with the Southern Pacific Railroad, good north-south arterials are imperative, built to four-lane standards and grade separated from the railroad as well as the freeway. The proposed major street system handles these needs as shown on the plan between Paso Corto Road-Lone Tree Way and the river. The City standards of four 12-foot traffic lanes and parking lanes are acceptable; however, the four-foot median island is undesirable and should be widened to 16 feet so that left-turn pockets could be installed at major intersections without removing parking. If parking is not needed, a wider median is still advantageous to provide physical protection for the left-turning traffic.

Another major deficit in the arterial street system is the lack of a good east-west major street south of the freeway. Such a street does not now exist as this area is being newly developed with subdivisions and the street improvements have not yet been completed. Two east-west arterials are recommended: Buchanan Road-Tregallas Road, which would provide good service all the way from Paso Corto Road to Hillcrest Avenue; the other major east-west arterial is Paso Corto Road-Lone Tree Way. It is recommended that Paso Corto Road join with the freeway at the westerly end of the City, proceed south and easterly to Lone Tree Way as shown on the plan. Paso Corto Road-Lone Tree Way is recommended to become a scenic drive for its entire length from easterly to westerly planning area limits.

The collector network as shown on the plan south of the freeway would bisect all major subdivisions and connect with major streets. Recommended collector streets as shown on the plan include Delta Fair Boulevard, Gentrytown Drive, Putnam Street, G Street, Worell Road, Davison Drive, Garrow Drive and another unnamed collector in the southeasterly portion of the City connecting Paso Corto Road and a new north-south arterial between Hillcrest Avenue and Lone Tree Way.

In the southeastern portion of the city street standards for collectors and local streets may need to be modified for hillside development. As long as zoning requirements require at least two off street parking spaces per dwelling unit, parking could be prohibited on one side of the street. This would reduce the collector street cross section to 34' (one 14' lane, one 12' lane and an 8' parking lane) and reduce the local street width to 30' (one 12' lane, one 10' lane and one 8' parking lane). The parkway width should not be narrowed and sidewalk widths adjacent to curbs with no parking should be no less than 6' for collector and 5' for local streets. (Refer to Figure XI-3)

Major street needs north of the freeway include the existing arterials as discussed earlier, with the addition of Ninth and Tenth Streets as a one-way couplet extending from A Street westerly of L Street. In addition, Fourth Street is recommended to be developed as a major street, connecting with Somersville Road on the west and curving south at the east end of the downtown area, and connecting generally with the intersection of Wilbur Avenue and A Street. New recommended collector streets north of the freeway include the East Thirteenth Street-Minaker Drive connecting between Wilbur Avenue and Eighteenth Street at Hillcrest Avenue. Other collectors include the extension of Oakley Road westerly into town going all the way to A Street just north of and paralleling the Southern Pacific Railroad on the Gary Avenue-Minner Avenue-Belshaw Avenue alignment. The final collector street recommended north of the freeway is the extension of Eighteenth Street westerly from L Street and tying into Somersville Road where it is now partially developed.

In specific reference to the Southern Pacific Railroad, it is recommended that all crossings of the tracks be grade separated. Two grade separations exist at "G" and "L" Streets, and a third has been approved at Cavallo Road. Three additional major streets should be separated as soon as possible; Somersville Road, "A" Street and Hillcrest Avenue, with the priority recommendations in the order as listed. Perhaps more consideration should be given to placing the grade separation of "A" Street as first priority as Somersville Road is outside the city limits where it crosses the railroad tracks. However, Somersville Road is narrow at present and the crossing is somewhat blind; and although it is protected by gates, the amount of traffic is increasing rapidly on Somersville Road. With the new State program of a larger grade crossing protection

fund with 80 percent of the improvement cost being paid from the fund, 10 percent by the railroad and 10 percent by the local community, the City of Antioch should make a special effort to get established on the State priority list for grade separation structures. The first step would be to study the problem and prepare preliminary recommendations concerning the crossing protection with estimated costs and other justification data required by the Public Utilities Commission.

H. DOWNTOWN

The downtown area of Antioch is in need of revitalization and modern street facilities are a part of the requirement. As shown on the plan, Somersville Road extends northerly and connects with Fourth Street, which is recommended as a major street through the downtown area. Because of limited right-of-way, four lanes of traffic without parking is recommended. Normally, this could be done with 48 feet curb to curb and no parking on the existing 60-foot right-of-way, although this only leaves six feet for sidewalks. At the easterly end of the downtown area, it is recommended that Fourth Street curve southeasterly of B Street and tie in with the intersection of A Street and Wilbur Avenue. This, in effect, would provide a loop type system so that traffic in an east-west direction would have the opportunity of proceeding through Antioch directly to the Ninth-Tenth one-way couplet or diverting in a northerly direction and proceeding through downtown via Fourth Street. It is felt that this flexibility would free up traffic congestion in the downtown Antioch area and enhance its revitalization.

In reference to the Ninth-Tenth one-way couplet, this is recommended to offset the need for widening Tenth Street which is now a two-lane facility on a minimum right-of-way width. Also, the geometrics at the east end lends itself to a good connection to the intersection of A Street and Wilbur Avenue. At the present time, Wilbur and Tenth have a sizable jog at A Street and the one-way couplet would eliminate this for the westbound movement and simplify the eastbound connection. It is recommended that the westerly end of the one-way couplet be in the vicinity of L or M and Tenth Street where Ninth Street would connect back with Tenth and Tenth would continue westerly as a four-lane divided facility.

As shown on the plan, G Street is recommended as a collector street, although it will be continuous from Fourth Street all the way south to Paso Corto Road, which is over two miles in length. The reason this facility is recommended as a collector is that Contra Loma Boulevard-L Street and Lone Tree Way-A Street are both major arterials and less than one mile apart, which is the usual recommended spacing for a major street. So in actuality, G Street provides relief for these two major facilities due to its long length of continuous movement in the north-south direction. At the present time, G Street is only developed southerly to Putnam Street, but it still moves traffic of major significance. In the downtown area, G Street actually serves as the major penetration even though it is a collector facility. The center of town is in effect at G and Fourth Streets and G Street, while narrow, only being a two-lane facility, does provide direct traffic service to downtown.

A portion of this General Plan study is devoted to a traffic study of the downtown area. Because a semi-mall concept has been considered for F, G, H, Second and Third Streets, consideration was given as to how traffic could be adequately handled if the existing parallel parking on these narrow 40-foot streets was converted to angle parking. The right-of-way width is only 60 feet between buildings and there is no room for street widening. It was concluded that if angle parking is allowed, it can only be provided on one side of the street due to maneuvering requirements. In addition, the streets with angle parking would have to be one-way to reduce as much as possible the obvious traffic congestion that would result from the backing movements. This limited angle parking would balance the existing parallel parking on both sides of the street but would not increase the on-street parking inventory. The only advantage from a downtown development standpoint would be that the streets in question could meander and it would be feasible to provide added landscaping and, in general, somewhat beautify the downtown area. It is emphasized, however, that from a traffic standpoint there would be no advantage, in fact, some disadvantage probably, for the movement of traffic in and out of downtown Antioch.

I. TRAFFIC CONTROL

In general reference to the condition of traffic control devices in Antioch, several comments are offered. First of all, many of the existing stop signs are in need of replacement and new state and federal standards recommend the use of 30-inch stop signs fully reflectorized. Almost all of Antioch's stop signs are 24 inches and non-reflectorized, except for the white letters; and in many cases, these signs would not reflect well at night because they are quite old. Initially, it is recommended that all four-way stops be converted to the 30-inch signs along with all signs protecting major arterial streets. These changes should be completed to be in keeping with state and federal recommendations. The other major traffic sign deficiency noted concerns street name signs which are very old and not reflectorized for nighttime visibility. A minimum program should include four to five-inch white reflectorized letters on a green reflectorized background with two sign installations at each intersection along a major street and one installation for all other locations. On major streets, the sign should be installed at the near right location for both directions of travel and mounted near the curb for good readability. The condition of traffic markings in Antioch is fairly good in reference to striping, crosswalks and school markings. However, the stop legend and limit lines for stop signs need attention and red curb clearances need to be painted in advance of stop signs and at other intersections for improved visibility at critical location.

J. ACTION PROGRAM

1. Recognize the arterial and collector designations shown on the plan map and cause those facilities to be developed to the appropriate standards.
2. Institute a feasibility study of railroad lowering or grade separated projects for Somersville Road, A Street and Hillcrest Avenue.
3. Upgrade all existing roads in terms of inadequate pavement, curbs and gutters.

4. Coordinate recreational Trails system of ERME (Refer to Figure VI-13) with vehicular circulation plan as to different characteristics and needs to ensure minimum interface conflict.
5. Integrate pertinent conclusions of recommended Airport study of the Community Facilities Element into this element once the study is completed.
6. Study feasibility of relocating S.F.R.R. to utilize same right-of-way as S.P.R.R.

NOTES:

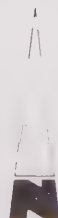
1. SHADED AREA REPRESENTS PREDICTED 1995 65 dB (A) CONTOUR FOR STATE FREEWAY 4.
2. CONTOUR IS SUBJECT TO A RANGE OF ± 3 dB (A)
3. THIS MAP IS FOR GENERAL PLANNING PURPOSES ONLY. NOISE CONTOURS TO BE VERIFIED FOR OPERATIONAL PLANNING.

SOURCE: STATE OF CALIFORNIA
TRANSPORTATION AGENCY
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS



NOISE CONTOUR MAP

FIGURE XII - 1



XII

NOISE ELEMENT

A. INTRODUCTION

Government Code Section 65302(g) requires a Noise Element in quantitative, numerical terms showing contours of present and projected noise levels associated with all existing and proposed major transportation elements. These include but are not limited to highways and free-ways, recreational activities, ground rapid transit systems and ground facilities associated with all airports.

The Noise Element describes the social, economic, environmental and human impacts of noise on the general well-being of the community, delineates the sources of noise in and around Antioch and attempts to prevent similar or additional problems in the future, especially in the areas of circulation, land use and housing. In addition, this element is an educational device through which many citizens will, hopefully, become more aware of the noise problems and how to effectively deal with them.

The scope of this element includes:

- ° A statement of general policy indicating Antioch's general intentions regarding noise and noise sources in the community.
- ° Desired maximum noise levels by land use categories.
- ° Discussion of criteria and standards for noise emissions from transportation facilities and local "fixed-point" noise sources.
- ° Guide to implementation.
- ° Educational information on sound and noise, including noise attenuation.

B. RELATIONSHIP TO OTHER GENERAL PLAN ELEMENTS

The Noise Element is related most closely to the Circulation, Land Use and Housing Elements since it provides noise level standards related to the compatibility of land use, of which residential use is a highly important component.

Noise level standards will become decisive factors in locating transportation facilities (or their design) in relation to existing or planned land uses. Consideration will also be given to the adverse effects of noise on various activities near noise sources and to architectural design and insulation of buildings. The Noise Element is also closely related to the open space element since noise can adversely affect the enjoyment of quiet pursuits in open space. Conversely, open space can be employed to buffer noise sources from sensitive uses through distance and extensive tree planting.

C. GOAL

It is the goal of the City of Antioch to prevent any increase in noise levels over acceptable levels in all areas of Antioch, insuring appropriate noise standards through effective planning and land use regulations.

D. OBJECTIVES

1. Identify the sources of sound pollution in Antioch.
2. Develop criteria and guidelines for use in setting standards for noise emission, transmission and exposure, including all necessary changes or modifications to existing codes as required for compliance.
3. Provide assistance to all persons, groups or organizations engaged in developing and implementing noise abatement procedures.
4. Prohibit or require effective reduction of all unnecessary, excessive and offensive noises from all sources subject to the City regulations.

E. NOISE

In the development of the General Plan, recognition of the environment and the allocation of land uses to preserve and enhance our total resources is a paramount effort. Included in this category is noise and its insidious effect on man, his life style and productivity.

Noise, as perceived by the human ear, is a function of pitch and loudness. Pitch is measured in terms of frequency from high whistles to low rumbles and roars. Frequency measurements are expressed in cycles per second, the sensation of loudness is determined primarily by the physical intensity of sound expressed in decibels.

Accoustical engineers have ranked loudness levels of sounds perceived by the human ear on a scale using the decibel as the unit of measure. Starting at the threshold of hearing, zero decibels, the scale extends to the threshold of pain, 140 decibels.

Identification of a number of noise ranges in decibels

that may be observed in an urban area consist of the following:

- ° Quiet rural suburban area at nighttime, 35 db.
- ° Urban residential areas at daytime, 55-65 db.
- ° Light commercial traffic over a commercial street at daytime 60-75 db.
- ° Helicopter flying overhead, 90-100 db.
- ° Truck passing on a major highway, 90 db.
- ° Diesel freight train at 40 miles per hour, 200 feet away, 100 db.

The National Noise Abatement Council has put the case against noise this way: It is bad for the comfort and well-being of the people for it makes nervousness, irritability, fatigue, improper rest and even actual illness traceable to nervous tension. It takes its toll on business and industry in impaired efficiency, lowered output and increased errors; and it is a general safety hazard.

To better understand sound, the following characteristics and factors developed by the Quiet City Committee of the Los Angeles Division of the League of California Cities are itemized:

- ° Sound is a vibration transmitted by molecules of air.
- ° The decibel is a very convenient unit of measurement because of the tremendous sensitivity of the ear.
- ° Typical everyday sound levels range from 30 dBA (very quiet) to 100 dBA (extremely loud) or sometimes higher.

- ° People do not perceive noise in direction proportion to sound level. An average person will perceive a change of 10 dBA as sounding twice as loud (or half as loud). As an example, 70 dBA is approximately twice as loud as 60 dBA.
- ° Sound may be "steady", "fluctuating" or "impulsive." Impulsive sounds such as riveting tend to be more annoying than steady, broad band noise.
- ° The extent to which a sound exceeds the background noise is a measure of its intrusiveness. This background noise is also called ambient noise.
- ° Ambient noise varies with location and with the time of day or night.
- ° Sound gets quieter as the source gets farther away. The relationship of sound level to distance is strange, however. Every time the distance from the source is doubled, the sound level goes down 6 db.

F. SOURCES OF NOISE IN ANTIOCH

In Antioch, noise originates basically from three types of sources: linear sources (highways), spot sources (location of a specific type of activity such as service stations, swimming pools, etc.) and from an area of activity such as a manufacturing plant or transportation terminal.

Most noises may be categorized according to their associative emanation such as:

Transportation Noise

Sounds of horns, engines, tire squeal, sirens, noise caused by cars, trucks, trains, airplanes, ships, helicopters, police cars, etc.

Recreational Noise

Swimming pools, playgrounds, fairground auto races, ballfields or noise caused by motorboats, recreational vehicles or model airplanes.

Commercial and Industrial Noise

Includes those from shopping centers, manufacturing plants, heavy equipment and warehouse operations or whistles, horns, loudspeakers, etc.

Residential Noise

Includes those generated by lawnmowers, air conditioners, loud voices, musical instruments, radios, etc.

1. Airport

The Antioch Airport is primarily home base for private business and pleasure aircraft. Noise has not been a significant problem associated with this airport and should not become a problem if proper precautions are taken to protect it from urban encroachment. The best noise protection the City can gain for the existing location or any other location is through proper planning of airport buffer zones and approach and side clearance zones as specified by FAA standards. Any potential development near the airport should be evaluated as to its noise compatibility characteristics in accordance with Public Utilities Code, Article 3, Chapter 4, Part 1, Division 9 of the State Government Code (State Aeronautics Board Noise Standards) and California Administrative Code, Title 25, Chapter 1, Subchapter 1, Article 4 (Noise Insulation Standards).

2. Vehicular Noise

Noise emanating from the freeways and surface streets in and around Antioch constitute the major source of noise. The steady drone of the freeways is contrasted by, but just as irritating to some, as the noise from streets and highways within the City. Highway 4 being a main highway route carries large amounts of truck and bus traffic, constituting a major source of freeway noise through Antioch.

Many variables affect the amount of exposure to vehicular noise within the community including:

- ° Peak hourly auto traffic flow in both directions.
- ° Number of trucks or buses.
- ° The amount of gradient in the road and the direction of the traffic in relation to it.
- ° Stop and go traffic (signals, stop signs, etc.)

3. Residential Area Noises

Noises produced in residential areas generally include such things as power lawnmowers and other small power tools, air conditioning equipment, excessively loud human voices, barking dogs and radios.

Better insulation in the structures and barriers are often not the answer in these cases. A noise ordinance could help substantially. Probably the best and most effective way to combat this noise problem is through an inner-strengthening of the neighborhood, involving a combination of increased community pride, public awareness and concern and inter-family consideration for their neighbors' well-being and privacy.

4. Transportation Noise

Railroads

- ° Atchison, Topeka and Santa Fe Railroad
- ° Southern Pacific Transportation Company

The level of railroad noise is well above the average ambient level and, although it is only occasional and represents peak levels, it is a very undesirable and irritating noise, especially when it interferes with conversation or sleep. Railroad noise is and will continue to be a detriment to commercial business and property values along the right-of-way unless something is done to remedy the situation.

Although rail service and operations have declined during the past decades, there is now a rejuvenation of passenger service under AMTRAK which could mean more trains scheduled through Antioch in the future to meet demands. Additional industrial development will also mean greater rail activity and may require additional spur lines.

- ° Average speed of traffic.
- ° Existence or location of barriers between the source of noise and the receiver.
- ° Mechanical condition of the vehicles.

A study of the State highway system by the State Highway Department resulted in a map indicating the noise contours up to 65 db along State Freeway 4. (Refer to Figure XII-1 of Existing Noise Contours) This study shows a variation based on the total amount and type of vehicles, speed, topography and screening effects of the topography along the routes.

By far the most objectionable noise is the locomotive whistle which is sudden, startling and audible for great distances. Proper design and limitation of street crossings, working closely with the railroad authorities, could result in a substantial reduction of this particular noise.

5. Commercial and Industrial Noise

In areas where noise is a part of the day to day operation of the particular land use such as shopping centers, auto repair shops, industrial equipment and warehouse operations or manufacturing plants, any restrictions on noise should take into consideration the characteristics of that particular land use and standards should be set accordingly. In some cases, especially industrial areas, appropriate design may be needed which incorporates effective attenuation into the structure and grounds with, perhaps, a barrier or buffer between the use and adjacent neighborhoods. Standards and criteria pertaining to these types of noise abatement could be dealt with through a noise ordinance or other similar tool and could also include such irritating noises as whistles, horns, loudspeakers and other noise making devices common to such areas. Industrial and commercial uses which create clearly unacceptable noise should be prohibited by zoning or other provisions.

6. Recreational Noise

- Active parks
- Ballfields
- Outdoor swimming pools
- School playgrounds
- Contra Costa County Fairgrounds
- Boaters

Fortunately, the activities that take place in the above categories are usually confined to daytime hours with the exception of the Contra Costa County Fairgrounds. Even in the daytime most recreational areas in Antioch are not a major noise problem.

However, two sources of recreational noise of particular concern in the Antioch area are associated with the auto races at the Contra Costa County Fairgrounds and the power boat activities on the San Joaquin River. In the past, residents near the County Fairgrounds race track facility have complained about the severity of noise emissions from the evening auto races. Although an extensive noise study has not been conducted by a professional acoustical engineer and no noise emission records are currently available, the Antioch Police Department is aware of the auto racing noise problem and has indicated the department's support and cooperation in conducting a noise attenuation study with a professional acoustical firm. Additionally, the City's Department of Community Development has recently acquired a sound level meter as an initial step in developing a noise attenuation program.

In undeveloped parts of the Antioch planning area, especially in hilly terrain, there is a great potential for recreational vehicle noise emanating from the authorized or unauthorized use of off-road type vehicles, primarily motorcycles. This can be a major noise problem; however, it is primarily a law enforcement problem and no further specific action is recommended.

G. NOISE CONTROL MEASURES AND PROPOSALS

There are three basic procedures that may be used to reduce noise: (1) control the noise at the source (redesign, enclosure, etc.), (2) interrupt the path of the noise (barriers, distance separation, structures, etc.) and (3) personal protection (earplugs, adaptation to the noise, etc.)

As with most pollution problems, the major emphasis should be placed at the source of the noise. Until the source can be controlled, interrupting the path is also an acceptable method. Personal protection should always be a last resort. If, however, we accept that it is economically or physically not feasible in the long run to reduce noise levels in certain areas to the point where residential living or other "quiet" land use is acceptable, then we must consider alternate uses for the land that are more

compatible with the noise that occurs there. So, to determine the "compatibility", we will have to implement the goals, objectives and standards pertaining to community noise levels, a key element would then be the enactment of a comprehensive community noise control ordinance.

To be valid in a court of law, noise regulations must be quantitative. They should also be limiting or prevent any escalation of noise. The noise limit at any given location should be based on the following general criteria: (1) the character of the location, (2) the time of the day and (3) the character of the noise.

H. ATTENUATION OF SOUND

Eliminating existing noise conflicts is more difficult than preventing future ones, since in existing situations some preventive options may not have been considered in the original design. When a noise conflict exists, the City can take a variety of actions to reduce the conflict, varying in degree of public involvement and approach to the noise conflict. Any noise ordinance should give due consideration to remedial measures and potential amortization of noise problems which cannot be corrected.

Since sound energy from a source usually spreads out and never returns, the problem is how to control these unwanted noises. The two possible ways of doing this are by attacking the problem at the source, stopping or reducing the noise at its origin, or by reducing the intensity of the sound before it reaches the receiver.

1. Landscaping as an Attenuator

Probably the most aesthetically pleasing and environmentally beneficial form of acoustical control are plants. However, plants are not the best attenuators when compared to manufactured products, rocks or other forms and elements. Basically, the effectiveness of plants to control sound levels is determined by:

Sound - Its type, decibel level, intensity and origin.

TABLE XII-1

TYPICAL SOUND LEVELS

DECIBEL LEVEL	RELATED COMMUNITY OR OUTDOOR NOISE	RELATED HOME OR INDOOR NOISE	BEGIN HARMFUL EFFECTS
140 Threshold of Pain			
130			
120 Uncomfortably Loud	Armored Personnel Carrier 123 db		
110	Scraper-Loader - 117 Riveting Machine - 110	Rock and Roll Band 108-114	
100 Very Loud	Jet Flyover at 1,000 feet 103	Helicopter Overhead 90-100	
90	Electric Furnace - 100 Farm Tractor - 98	Food Blender - 88	
80 Moderately Loud	Power Mower - 96 Prop Aircraft at 1,000 feet - 88	Garbage Disposal - 80 Clothes Washer - 78	
70	Passenger Car, 65 mph at 25 feet - 77	Dishwasher - 75 TV Audio - 70	Hearing Loss 75-85
60	Near Freeway Traffic - 64	Conversation - 60	Extra Auditory Physiological
50 Quiet	Light Traffic at 100 feet 50	Bedroom Air Conditioner 55	Effects 65-75 Speech Interference 50-60
40			
30 Very Quiet		Quiet Residential Area at Night - 35	Interruption of Sleep 35-45
20			
10 Just Audible		Leaves Rustling - 20	
0 Threshold of Hearing			

Source: Lampman and Associates

Planting - Type, height, density and location.

2. Solid Barriers

The most available and usually most economical means of intervention in the noise path is construction of barriers as a means of reducing noise, but this may result in unsightly, monotonous walls. Barriers must be close to either the source or the receiver to be effective. Trees and shrubbery aid little in reducing noise in many cases, though landscaping may be a useful means of disguising a wall serving as the actual noise barrier.

3. Insulation of Structures

When new construction is anticipated in noise impact areas, special noise insulating design or site layout may be a condition of issuance of building permits. Impact areas may be zoned and developed for other than residential use. Some cities are considering establishment of noise zones allowing only certain uses without special noise insulation. Such restrictions are within the police power of local government in encouraging the best use of land and preventing premature deterioration of land and improvements and resulting increased public costs.

I. ACTION PROGRAM

1. Request that all law enforcement agencies (i.e., Antioch Police and Contra Costa County Sheriff, etc.) strictly enforce statutes pertaining to motor vehicle muffler systems.
2. Work closely with the Federal Aviation Administration and Contra Costa County Airport Land Use Commission on any matters that might affect noise over Antioch such as changes in flight patterns and type or number of aircraft handled by the field. Evaluate any potential development near the airport as to its characteristic noise compatibility.

3. Initiate action to work with industries in the area to develop sound level suppression measures.
4. Restrict certain noise impact areas to non-residential uses in accordance with the Land Use Element of the General Plan.
5. Make special noise insulating design or site layout a major consideration in issuing building permits.
6. Whenever possible, isolate freeways and highways from residences and schools by noise attenuation barriers, right-of-way design, or by a distance sufficient for the lowering of the noise level to acceptable limits. Establish truck routes which avoid residential, school and institutional areas.
7. Require attenuation properties as a part of the Park and Recreation Commission's design review for new recreational developments such as ball parks, swimming pools, etc. to minimize the noise impact on neighboring land uses.
8. Continue cooperation with the County to develop an all-encompassing comprehensive noise ordinance to control community noise, including noise created at the Contra Costa County Fairgrounds.
9. Require open space and/or extensive landscape buffering along major freeways, highways and between heavy industrial uses or other noise sources and existing or future residential uses.
10. The City should support and adhere to all State and Federal legislation designated to abate and control noise pollution. Such legislation shall include the interim noise standards and procedures developed pursuant to Section 109(i) 23 U.S.C. as added to Title 23 by Section 136(b) of the Federal Air Highway Act of 1970 in addition to other legislation listed in this element.

11. Retain the services of qualified acoustical engineers to conduct noise readings throughout the community and develop specific recommendations for noise attenuation; include in this study consideration of other transportation related noise sources including railroads.
12. Develop a monitoring system to establish an acceptable ambient level in the various neighborhoods in the community.
13. Instruct staff to incorporate the findings and recommendations of the detailed noise survey as stated above in objective No. 11 into this element of the General Plan.

XIII

**COMMUNITY
FACILITIES ELEMENT**

A. INTRODUCTION

The Community Facilities Element provides an assessment of the public buildings, lands and services in the Antioch area. The demand for more and varied community facilities has increased and continues to do so as urban areas expand, population grows, old facilities become outmoded and living standards and public expectations rise. The recommendations in this element are based on an in-depth study of existing facilities and services for a maximum general plan holding capacity of 60,000 people.

Section 65303 of the Planning Act of the California Government Code permits but does not mandate the inclusion of a Community Facilities Element in General Plans.

B. GOAL

It is the goal of the City of Antioch to insure a full and adequate range of public and private community facilities, and to provide a consistently high level of public services

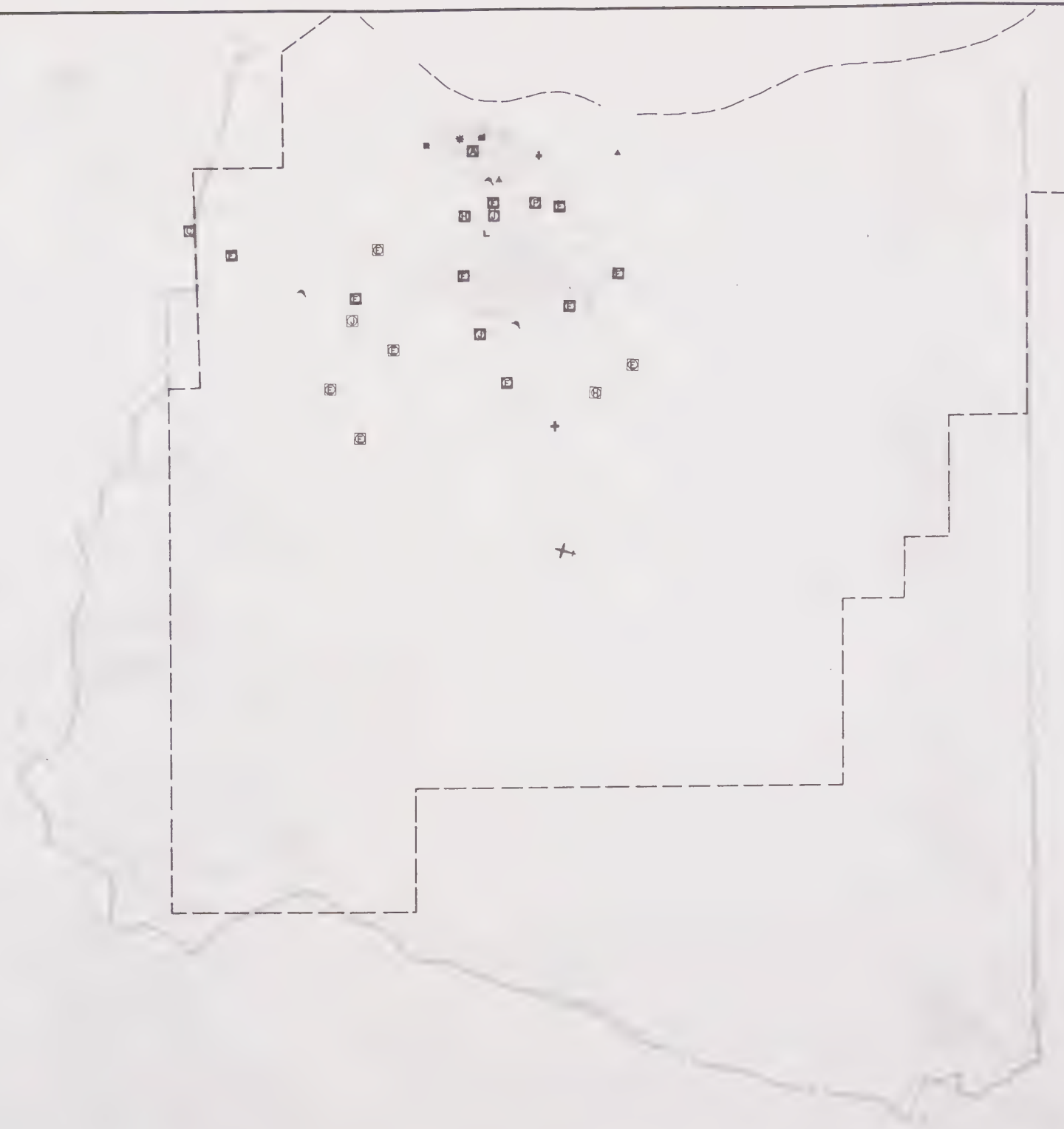
so as to insure each resident the opportunity to enjoy a safe, healthful and attractive living environment.

C. OBJECTIVES

1. The City should encourage appropriate levels of health and safety services and facilities to adequately serve the current and future needs of the community, including police and fire protection, refuse and sanitary disposal services, flood control and building safety and public utility services.
2. For all services and facilities to be provided directly by the City, the City should exercise the full care necessary to insure that all such services and facilities are provided and maintained in an efficient and economical manner to the citizens of the community.
3. The City should investigate all opportunities for utilizing public services and facilities uniformly provided by other agencies, and the exclusion of similarly planned or existing services and facilities which may be adequately provided through the private or commercial sector of the community to ultimately reduce present and future costs of local municipal services.
4. Consistent with such policies, the City should continue City-School District cooperation in the joint use of park and recreation facilities; the development of park sites adjacent to school properties and the requirement of housing developers to provide a percentage of their site for open space and recreational purposes.
5. The City should promote and assist through its planning efforts the development and maintenance of a full range of quality educational programs and facilities, including the various public, private and parochial school systems.
6. The City should continue to assist through its planning process, the County Library System in providing the

LEGEND

- * CITY HALL
- CITY CORPORATION YARD
- POST OFFICE
- ▲ POLICE FACILITIES
- L LIBRARIES
- + HOSPITAL
- ~ FIRE FACILITIES
- + AIRPORT
- EXISTING PROPOSED
- ⓔ ⓔ ELEMENTARY
- ⓙ ⓙ JUNIOR HIGH
- ⓗ ⓗ SENIOR HIGH
- Ⓒ Ⓒ COLLEGE
- Ⓟ Ⓟ PRIVATE
- Ⓐ Ⓐ ADMINISTRATION
- ANTIOCH UNIFIED SCHOOL DISTRICT BOUNDARY



COMMUNITY FACILITIES

FIGURE XIII - 1

necessary expansion of public library services and facilities to adequately serve the present and future needs of the community. Library services should be continued as an extension of public educational opportunities and be expanded to include the broadening concept of libraries to serve as community information, communication, cultural and recreational centers for all residents of the community.

7. The City should promote and assist in the development of a community center to provide adequate facilities for town meetings and events related to governmental and community affairs, recreational and cultural activities.
8. The City should encourage a wide range of cultural training activities from amateur to professional levels, and the development programs as may be established by the various organizations, both public and private, throughout the community.
9. The City should cooperate with other governmental agencies and private organizations in providing adequate local facilities for the fulfillment of the cultural needs of the community.

D. EXISTING CONDITIONS

A complete survey of existing community facilities was compiled in May, 1973, by Lampman and Associates in preparation for the General Plan document. The report is entitled Community Facilities and includes an assessment of existing facilities related to community, educational, public utilities and service systems in Antioch. Please refer to this support document for further elaboration on the recommendations and action programs contained in this section of the General Plan.

E. ACTION PROGRAM

1. Civic Center Complex

It is recommended that a civic center complex be constructed in Antioch to house a broad range of governmental functions.

Foremost is the provision of a new City Hall. The existing City Hall is inadequate with regard to sufficient spatial and structural requirements. The General Plan calls for the immediate replacement of the existing City Hall with improved facilities equal to anticipated demand. The proposed civic center should also house other governmental services.

Additionally the plan recommends the existing post office should be relocated into the proposed Antioch Civic Center. The existing post office is spatially inadequate and requires more suitable headquarters.

Furthermore, the Antioch Civic Center would be an ideal location for representative offices of Federal and State government. An attractive civic complex would lure branches of higher government bodies to locate in Antioch particularly those bodies with jurisdictional interests in eastern Contra Costa County.

It is recommended that the new civic center be located in the downtown area of Antioch. This will perform a very important role in the revitalization of the central business district; and, of course, a downtown location would be most convenient in terms of available ancillary services for governmental employees. The Antioch General Plan Goals Committee strongly endorsed the downtown area location for the new City Hall because it is consistent with the General Plan goals and objectives supporting a rejuvenated central business district.

2. Community Center

A community recreation and cultural center should be provided for the citizens of Antioch. This could house a day care center, a senior citizens' program, a teen center, adult education and youth activities. It would permit a forum for town meetings and community interaction.

It is further recommended that the community center be constructed in downtown Antioch in conjunction with

the proposed Antioch Civic Center. The exact location of the community center, as well as the civic complex, would be determined by the comprehensive urban design study as recommended in the Community Design Element.

3. Public Health and Safety

The General Plan recommends that Fire Station No. 1 on West Tenth Street and Fire Station No. 3 on Gentrytown Drive be supplemented by the following program. Fire Station No. 2 at Lone Tree Way and Putnam should be phased out and moved south and east when warranted subject to seismic and geologic studies of specific sites due to the closeness of the suspected Antioch Fault. The relocation of this station will provide better fire protection service to the future residential and commercial development proposed to the southeastern part of Antioch. The plan also calls for a fire station in the general vicinity of Eighteenth Street and Vera Avenue to serve future residential and industrial development in the eastern part of Antioch. Locations of these two stations are currently under study by the Antioch Fire Department and are supported in concept by a consolidated fire district. Additionally, the General Plan proposes a fire station location in west Antioch in the general vicinity of Tenth Street and Somersville Road. Although not currently needed, this station would be constructed in the future pending significant residential and industrial development in west Antioch.

The specific location of new fire stations must consider both travel distance and travel time to the areas to be served. Although national standards are currently being reviewed and reevaluated, the travel or response time should not be greater than four minutes from the time the call is received until fire engines can reach destination. This means that physical barriers, traffic conditions and other obstructions must be considered as well as actual distance in the location of future fire stations.

Future fire protection in the Antioch area will be significantly strengthened by the consolidation of services.

Police protection is provided to the residents of Antioch by the City's Police Department. Although the existing station, located at 301 W. 10th Street, is relatively new, additional storage and office space would be highly desirable at the present facility. Additionally, new improvements may be required to the police training facilities which are currently located along the San Joaquin River in the vicinity of Fulton Shipyard Road. As the City population continues to grow, new manpower requirements and training facilities will also be required.

The Delta Memorial Hospital site should continue as a hospital location. Periodic studies should be conducted by the hospital and appropriate community and health planning agencies to assist the hospital in providing the necessary health care services to meet the needs which come with the population growth of the area.

4. Public Utilities

The water distribution system currently in operation in the City of Antioch will be sufficient to meet the quantity demands of projected residential, commercial, industrial and institutional use. However, the City should make demonstrable efforts to ameliorate and maintain water quality in the San Joaquin River by participating in future regional and State programs and by launching a local improvement campaign.

By protecting the hillside watersheds through the adoption and implementation of the Environmental Resource Management Element, the General Plan safeguards the Antioch storm drainage system. The General Plan delineates a "line of urbanization" as a boundary to development ascending the steeper hillsides of 30 percent slope or greater, thereby avoiding paved surfaces in the steeper runoff areas and the threat of additional flood waters will be minimized.

The present wastewater facilities are questionable due to the present discharge standards and requirements of the

Bay Area Pollution Control Board, therefore, no additional tentative tract maps are being accepted by the City. A study is currently underway to determine whether the existing facility should be enlarged and improved with Federal funds, or if Antioch should participate in the East County Regional Sewage Treatment Facility. The General Plan recommends that a decision be made as soon as possible so that the policies recommended in the Housing Element and the Land Use Element which are ultimately dependent on wastewater treatment can be implemented.

The existing sanitary landfill site in Antioch has reached capacity, and the City has had to use adjacent facilities owned by Pittsburg. Although a number of possible sanitary landfill sites have been studied by the City of Antioch, no particular site has been selected and the problem of an adequate solid waste disposal facility for the Antioch area remains unresolved.

Gas, electric and telephone service available in Antioch should be adequate for projected population demand. In light of the national energy crisis, the General Plan recommends conservation of resources in whatever manner possible at the individual and the municipal levels. The General Plan also recommends the undergrounding of utility lines as described in the Community Design Element.

5. City Maintenance Service Center

Antioch's corporation yard and maintenance facilities are located on a 1.6 acre site between O and M Streets, south of 4th Street. Some additional land has been purchased by the City and is available for immediate expansion.

Facilities at the site include a garage, locker rooms, sign and carpenter shop, meter service shop, an administrative office and a new 350 square foot warehouse. Additionally, an older warehouse of equal size provides storage for the City's recreation equipment. The aforementioned warehouse for public works storage is really

the City's central warehouse. All types of supplies are kept in this facility. A great deal of the mobile equipment is based at this center. Very few vehicles have covered parking. It would be advantageous to pave the expanded site to provide for easy movement of vehicles and storage of equipment. It would also minimize dust and other inconveniences of the dry or wet seasons that occur. Some of the specialty equipment can continue to be parked in the open. Such items as street sweepers and large construction vehicles do not need to be stored inside. Expansion and improvement of the municipal garage can be anticipated.

As the City is in the utility business, a good deal of piping and other related materials must be kept by the City. It is not appropriate to store this type of equipment or material inside a structure. As the City's demands continue to increase, additional space will be required for the storage of such equipment. The continued growth of Antioch will necessitate expansion of the Service Center for additional storage of equipment and materials.

The site does not provide adequate employee parking. Additional land should be acquired and paved for employee parking.

As the community expands, the site should be more centrally located and service consolidated to effect a greater cost savings, etc.

6. Airport

An assessment by the County's Airport Land Use Commission indicates that the existing Antioch Airport will not be adequate to meet projected demands. Although there is presently no suitable alternate site for an airport within the immediate vicinity of Antioch, a joint study should be undertaken by the appropriate airport authorities (i.e. Federal Aviation Administration, County Airport Land Use Commission and Association of Bay Area Governments) to determine several options for an appropriate airport facility in eastern Contra Costa County.

7. Fairgrounds

The facilities at the Contra Costa Fairgrounds should be adequate to support the needs of the projected population of Antioch. However, the relationship between the fairgrounds and adjacent land uses is highly unsatisfactory. There is no buffer to separate residential areas from the noise of car races or the view of parking lots.

The General Plan recommends that a landscaped wall be installed at the periphery of the fairgrounds to separate the enthusiastic crowds from the neighboring homeowners. The wall and the plantings should be designed for maximum audio and visual separation.

8. Library

The Antioch Library is a new facility, adequate to meet the needs of the projected population. The local facility is a part of the Contra Costa County Library System which can absorb the demands of additional borrowers.

9. Educational Facilities

Although State averages for public school enrollment are dropping, the elementary school age population in Antioch shows very little decline. Thus, while other California cities are limiting new school construction, the General Plan recognizes a need for additional educational facilities in Antioch. The great proportion of school children in the Antioch population is directly related to the type of housing available locally. This relationship is described in detail in the Housing Element.

The Antioch planning area is served principally by one school district, the Antioch Unified School District. Eight elementary schools (grades K-6), two junior high schools (grades 7-9) and one senior high school (grades 10-12) are now operating within the jurisdiction of

the Antioch Unified School District. Approximately one-fifth of the planning area to the southeast is within the jurisdiction of the Brentwood Union Elementary School District and the Liberty Union High School District. Both of these districts, however, do not have existing plant facilities within the Antioch planning area.

The General Plan recommends an additional nine elementary schools to serve the proposed residential neighborhoods in Antioch. According to national recommended minimum school standards, 10 acres of land are adequate to house an elementary school of up to 850 pupils. The average size of elementary school sites within the planning area is about 12.7 acres. Antioch unified standards indicate that school children should reside within 1/2 to 3/4 of a mile walking distance of the elementary school they attend and should not be required to cross a heavily traveled street in order to reach their destination. The proposed elementary schools are based on these standards and coordinated with the five existing sites on which the Antioch Unified School District has development options. In addition, elementary school sites were located in conjunction with neighborhood parks and the townwide open space system. This facilitates pedestrian and bicycle access to the schools with a minimized encounter of heavily traveled streets.

The General Plan recommends an additional junior high school for Antioch to be located in Gentrytown. This would supplement the services of the two existing facilities, Park Junior High and Antioch Junior High. The recommended site size for a junior high school is 25 acres. This would provide building, playground and auxiliary space for 1,000-1,200 pupils. The students should have to walk no more than one and one-half miles to reach their school. Again, the proposed site has been coordinated with an Antioch trail system to facilitate pedestrian and bicycle access.

The General Plan endorses the construction of a second high school. The new facility will be located in southeast Antioch on a 40-acre site that meets national space standards. Ideally, all students would be within a two mile walking radius of high school. However, there are

several areas within the City of Antioch where this desirable condition will be unattainable.

Los Medanos Community College, located on a 110-acre site along the western boundary of the planning area south of Leland Road, between Loveridge Road and Standard Oil Road, is a public two-year facility offering an Associate of Arts degree. A brand new facility, the college will accommodate some 3,500 students within an enclosed mall complex. Existing circulation to the site is unsatisfactory because the only access to Los Medanos for Antioch residents is via Highway 4, Delta Fair Drive and Buchanan Road. The Circulation Element proposes a northerly extension of Paso Corto Road to provide more convenient routes to the community college for Antioch students. The Community Facilities Element joins forces with the Circulation Element in recommending this arterial extension and grade separation interchange at Highway 4.

XIV

**COMMUNITY
DESIGN ELEMENT**

A. INTRODUCTION

The State of California Government Code, Section 65303-7(g) permits each local government to cause to be prepared and adopt a Community Design Element. The Community Design Element is not a mandated section of the General Plan; it is included in the General Plan at the option of the individual city.

The Community Design Element is an examination of the visual image of a city. It considers the spatial sequences of a trip through town, the quality of the environments encountered and the simple satisfaction derived from just looking around. Community design must respect history, reaffirming the positive aspects of a visual heritage.

This Community Design Element deals primarily with the appearance of Antioch, but it can not avoid the broad issue of land use allocation and the spatial arrangement of activities. Under consideration are the guidelines for more attractive future development and remedial measures for existing development. The guidelines range from theoretical concepts of perception to specific recommendations

for street furniture and tree planting programs. In all cases, the emphasis is on the visual image of Antioch as determined by design elements.

B. GOAL

It is the goal of the City of Antioch to preserve and enhance the visual character and image of the community, to insure that all future development occurs in harmony with existing natural and manmade features of traditional or perceptual value to the community and to upgrade those existing features throughout the City which may detract from the visual character or quality of Antioch.

C. OBJECTIVES

1. The City should develop an "environmental design manual" which would include the necessary criteria, standards, guidelines and illustrations to provide design direction for the entire City and the downtown area to insure the coordination of all public and private developments, improvements and beautification efforts.
2. The design criteria defined in the environmental design manual should seek to maintain the composition and form of the City as a series of smaller residential neighborhoods which have their own distinct identity and yet serve as a sense of place and identification to the City as a whole.
3. The design criteria defined in the environmental design manual should also include those physical elements which will create within the downtown area a commercial village; thus, defining a definite sense of "place" and identity by developing recognizable boundaries, clear entryways, strong focal points and an easily identifiable physical form for its separate areas which expresses the special functions of each.
4. The major natural features, such as hillsides, ravines, creekbeds and the river should each serve as the major

identifiable forms or connecting visual features throughout major parts of the City and the physical and visual access to these features preserved.

5. Consistent with the above objective, the City should encourage the extensive use of utility easements, open space and contour construction throughout hillside areas and the use of easements, vista points, greenbelts and parks to enhance views and access to major natural features throughout the community.
6. The City should develop suitable and adequate landscaping, utility undergrounding, sign control and site and building design standards to insure that all public and private developments are compatible with the natural and manmade resources throughout the community.
7. The City should develop and maintain specific policies and regulations specifying where and under what conditions multiple story or large-scale building may be permitted.
 - a. Multiple story or other large-scale buildings in particular should be prohibited from those areas where the scale or intensity of such development would detract from the existing character or image of adjacent developments, or where such buildings would collectively destroy the direct views to major natural features from surrounding areas.
 - b. The location, size, and arrangement of multiple story or other large-scale buildings and particularly massive clusters of such buildings, should be severely limited to protect the human quality or scale of Antioch and its predominant existing character as a low-density residential community.

D. EXISTING CONDITIONS

The current status of community design in Antioch is graphically portrayed by the visual image map. (Refer to Figure XIV-1).

The following terms are the basic vocabulary of community design. it is the organization of these paths, edges, nodes, districts and landmarks which determines the framework of Antioch's visual image. The recommendations in the Community Design Element reflect the analysis of the existing visual organization of Antioch that follows:

1. Paths

Paths are the channels along which the observer customarily, occasionally or potentially moves. They may be streets, walkways, transit lines, canals, railroads or flight patterns. Since other environmental elements are often arranged around paths, paths usually constitute the predominant element in the City's visual image.

There are two major paths in Antioch. One is the east-west axis of State Highway 4, providing high-speed circulation through, to and within Antioch. Unfortunately, there is no parallel street that goes crosstown and offers more local access than a four-lane freeway. The second is the San Joaquin River, which follows the definition of "path" to the letter: it attracts other environmental elements, and it aspires to be the predominant image of the City.

The landing pattern to Antioch Airport, the railroad tracks of the Southern Pacific and the Santa Fe and the aqueduct are other key paths in Antioch. Important vehicular paths include: Lone Tree Way, Somersville Road, Paso Corto Road, G Street, Fourth Street, Tenth Street, Eighteenth Street, Wilbur Avenue, Contra Loma Boulevard and the Pittsburg-Antioch Highway. The influence of these paths on the configuration of development in Antioch is demonstrated in the Land Use Element and the Circulation Element.

On a smaller scale, each resident has paths that are individually meaningful - a bicycle shortcut to school, the drive to the market, the route for walking the dog. These paths are important, too, because the driver, walker or cyclist who is always looking around is continually tallying clues to his particular visual image of Antioch.

LEGEND

MINOR ELEMENT

MAJOR ELEMENT



PATH



EDGE



NODE



DISTRICT



LANDMARK



PERCEPTUAL OVERLOAD



LITTLE CHOICE IN ENVIRONMENT



NOISE AND FUMES



NO CLEAR ENTRY



STRONGLY DEFINED SPACE



GRADE SEPARATED INTERSECTION



POOR CONNECTION TO SURROUNDINGS



LACKS WELL FORMED PUBLIC OPEN SPACE



NO SENSE OF LOCATION



POORLY MAINTAINED HOUSING



SCENIC OPEN SPACE AREA



CONTINUOUS PANORAMIC VIEW



SPECIFIC VIEW



VISUAL IMAGE

FIGURE XIV - 1



LAMPMAN & ASSOCIATES



2. Edges

Edges are boundaries or linear breaks in spatial continuity. They may be shores, railroad cuts, walls, steep slopes, aqueducts or power lines. Edges may act as a barrier or as a seam, performing an organizational role in the scheme of a city.

The major edges in Antioch are the hillsides which circumscribe the developed lowlands and the riverbanks which define a distinctive City limit. The enunciation of these edges is a vital factor: the more apparent the hillsides and riverbanks, the more readily the image of Antioch will conjure up rolling grasses and serpentine shores.

Minor edges in Antioch include the Contra Costa Canal, the Mokelumne Aqueduct, the railroad tracks and the swaths in the landscape determined by the rights-of-way of high tension utility lines. The City boundaries create an edge condition because they define an assortment of assessments, services and restrictions that frequently have visible repercussions. The land use plan reflects this pattern with the different types of edges caulking the crevices between the districts they have, in fact, created.

3. Nodes

Nodes are focal points, usually occurring at a convergence of paths. A concentration of use or purpose characterizes the node, as demonstrated by a major shopping center or an enclosed square. As a core, it may symbolize a district because its influence radiates to adjacent areas. The node is often the dominant feature of an image.

The two major nodes in Antioch are the downtown business district and the County East Shopping Center. While the shopping center attracts people to its variety of stores, the downtown is a center of professional and governmental services in addition to commercial enterprise. Although

downtown Antioch is a prime core in the community pattern, it is not quite equal to this role. Buyers and sellers are being lured away to County East, many offices prefer dispersed professional clusters and even the City itself at one time considered a nondowntown location for a municipal complex. Downtown Antioch is a node now because it has been a node in the past, not because it is taking ambitious steps to enhance this function. In order to preserve its imagability as the center of town, the Antioch business district must actively aspire to be the focus of local commercial, governmental and professional services.

Additional nodes in Antioch which attract people from well beyond the City limits include the Contra Costa County Fairgrounds, the Antioch Municipal Airport and Contra Loma Regional Park. The shopping facility at Eighteenth and A Streets is a minor node for commercial services.

Conspicuous for its absence as a node is a municipal marina that would coalesce residents participating in the opportunities afforded by the San Joaquin River.

4. Districts

Districts are sections of a city which the observer mentally enters "inside of," and which are recognizable by some common identifying character. Districts, or neighborhoods, give substance to the personality of a city as well as providing convenient geographical reference points.

The nodal qualities of downtown Antioch have given the character of a district to the immediate area. The downtown area includes the warehouses, the factories, the restaurants and the small shops at the periphery of the enterprise core on G Street. The overall downtown area extends as far west as Somersville Road, as far south as Tenth Street and as far east as A Street with the San Joaquin River as the edge to the north. In addition, the attractive architectural character

of many of the older buildings has given residents the opportunity to refer to the downtown area as a historical district.

Other districts include the open space and recreation associated with Contra Loma Reservoir and Regional Park and the residential neighborhoods easily identifiable as a part of Gentrytown or Lake Alhambra. Because these sections have "personality," they provide convenient reference points in the visual image of Antioch.

Conversely, many neighborhoods in Antioch could easily become districts but have failed to acquire a distinctive image because there is no equilibrium between unity and diversity. The houses and the lot sizes are too homogeneous, yet the street trees and walkways are too arbitrary to convey a specific image.

Similarly, the lack of a clear entryway into Antioch itself detracts from the sense of place so important to a city. In a regional sense, all of Antioch should be a distinct district whose unique character is clearly visible in the mind's eye.

5. Landmarks

A landmark is a simply defined physical object: a building, a sign, a tower, a store or a mountain. Some landmarks are visible at great distances from many angles; others are only locally visible from restricted approaches. The landmarks of lesser importance - trees, storefronts, signs - are the composite details of the urban image. All landmarks are clues to direction and identity.

The most visible landmark in Antioch is the smokestack sequence of the Pacific Gas and Electric plant. It can be seen down the San Joaquin River, up Wilbur Avenue and across the Antioch Bridge. Historical landmarks include a number of buildings distinctive for their architectural heritage. Of particular note is the

Fibreboard office that was formerly a schoolhouse. The other historic buildings are enumerated in the report prepared in conjunction with a Downtown Business District study.

The Los Medanos Community College, the County East Mall and the oil tanks are landmarks in the sense that they offer locational clues to the driver on the freeway. Similarly, buildings like Antioch High School, the Contra Costa County Fairgrounds, the K-Mart and the Safeway Shopping Center are landmarks useful in the image of a route.

Smaller landmarks are the result of personal observation, participation or preference - a friend's house, a favorite bar, an alluring shop window or a distinctive tree. Landmarks at all scales are key elements in a visual recollection of Antioch.

6. Other Features

The specific views of the Mount Diablo foothills and panoramic vistas from the Mount Diablo foothills are vital positive components in Antioch's image. On the other hand, the imposing sight of the oil tank farm detracts from the image of Antioch, as do the noise, fumes and refuse of the two dump sites at the intersection of Somersville Road and Paso Corto Road.

The Markley Canyon offers a very distinct sense of place in Antioch. However, there is an ill-defined sense of location in both the Municipal Reservoir vicinity and the winding roads just southeast of the Highway 4-Lone Tree Way intersection. In addition there is poor visual connection between the Fairgrounds, the Municipal Reservoir and the Eighteenth-A Street Shopping Center and their respective surrounding land uses. The lack of visual ties among land uses seriously interferes with a cohesive community design in Antioch.

E. ACTION PROGRAM

The following recommendations are made to improve the community design and visual image of Antioch.

1. The City of Antioch, in cooperation with the Downtown Merchants Association, should undertake or cause to be prepared a definitive urban design study for the downtown area and central business district of Antioch. The outcome of this analysis would be a comprehensive plan that provides the basis for appropriate land use development decisions in the downtown area. There are several goals in this General Plan document which address themselves to the revitalization of the downtown area and central business district as a village center. The effectuation of this idea requires specific guidelines to define, preserve and create the elements necessary for an attractive and prosperous downtown Antioch.
2. A comprehensive community design manual should be prepared in order to effectively communicate design standards to all those who are intimately involved with development in Antioch - contractors, subdividers, municipal employees, utility personnel, nurserymen and resident "do-it-yourselfers." This manual would provide a coordinated design vocabulary for neighborhoods, buildings, streets, parks and open spaces in Antioch. It would include recommendations for paving, lighting, sign graphics, types of trees, street and park furniture, architectural massing, exterior finishes and the like, all contributing to an orderly yet visually stimulating image for Antioch.
3. The Diablo foothills are a prime component of Antioch's image so views of them and from them must be protected and enhanced. High-rise construction that interferes with a satisfying vista should be prohibited; ascending development that cuts into the precious scrub-covered slopes should not be allowed. This recommendation also requires careful treatment of the linear view seen down corridors like Lone Tree Way and Paso Corto Road, and the horizontal views of the foothills seen as backdrops across town.

4. The San Joaquin River, as the other major natural component of Antioch's configuration, should be made far more visible and accessible than it is now. The riverfront should provide a route for pedestrians and cyclists as well as opportunities for active and passive recreation. If the riverfront was more intensively used for picnics, fishing, boating or just sitting, its importance would be amplified. In addition, the river should be made visible from appropriate vantage points in downtown Antioch, a tie currently severed by massive industrial warehouses.

Affirmative treatment of the San Joaquin River will infinitely clarify Antioch's image.

5. Greater restrictions should be placed on a developer's rights concerning soil because the quality of the earth is critical to community design in Antioch. First, preliminary grading plans should be required with all tentative subdivision plans in order for a development to be eligible for approval. In this manner, changes in the configuration of the land will be known well in advance of actual construction and any conflict with a desirable image can be rectified.

Then, the subdivider should be prohibited from extensive removal of topsoil. When good topsoil is scraped from the site, it is difficult if not impossible to grow trees and shrubs. The lack of vegetation seriously interferes with the quest for an attractive Antioch.

6. The streams that drain Antioch watersheds should be circumscribed by suitable landscape buffer zones in rural and urban areas alike. Of particular concern are two drainage canals, one at Highway 4 and Contra Loma Boulevard and the other running from Lake Alhambra through the southwest corner of the junction of Cavallo Road and Wilbur Avenue and continuing under Wilbur Avenue toward Rogers Point. These two areas should be rejuvenated as natural drainage courses.
7. The City of Antioch should reflect the goals and objectives of the General Plan by continuing efficient use of

Environment Impact Reports, examining them especially for potential adverse effects on the image and design of Antioch.

8. The City of Antioch should reevaluate its building codes and inspection standards in light of the burgeoning interest in community design. Since construction issues and site planning are the tools that actually craft manmade environments, the responsibilities of builders should be updated in terms of the visual image of the city.
9. The entryways to Antioch should be clearly identified in order to better establish a sense of arrival and sense of place. This entails more than just a sign; it involves a design study that would create an entry sequence by means of landscaping, paving, lighting and vistas. Driving along State Highway 4, the through motorist should know without a doubt, when he has reached Antioch. Similarly, the local driver should receive distinct visual clues to the City limits as he rides along Wilbur Avenue, Lone Tree Way, Buchanan Road and Hillcrest.
10. Commercial signs should be regulated as to size, height, projection, placement and materials. Limitations should be placed on garish advertising typified by the flashing signs of automotive commerce. This effort will considerably contribute to the revitalization of downtown Antioch, as well as to the strip development along Tenth Street between Somersville Road and O Street and along A Street.
11. A street tree program should be instituted in Antioch and the use of native California trees should be encouraged. By designating different trees for different districts, the identity of a neighborhood becomes more apparent.
12. Development plans should be initiated for land designated for parks and recreation. A key function of parkland is the visual relief afforded by the verdant open space. Parkland that is sterile actually detracts from the City's image by creating the vacant lot effect.

13. Utility wires should be installed underground wherever possible. Remedial treatment of existing overhead lines is particularly important on A Street, G Street, the downtown business district and Ridgerock Park.
14. Paso Corto Road and Hillcrest Road should be treated as parkways. They should be afforded appropriate landscape treatment, which might include views to adjacent agricultural land or the planting of native trees. The recommendation for parkways is treated in greater detail in the Scenic Highway Element contained in the Environmental Resource Management Element of this General Plan document.

XV

**METHODS OF
IMPLEMENTATION**

Adoption of the General Plan constitutes the important first step in carrying it out. Adoption should be followed by a series of further steps, discussed below, which collectively will make the plan an effective instrument in guiding the development of Antioch. The preparation of the plan will be of little value unless it is put to work.

A. KEEPING THE PLAN UP TO DATE

The General Plan has been described earlier as the official statement of public policy on the development of Antioch and its environs. To express an effective policy, it must be current policy. This means that the plan should be reviewed annually to see if it represents the community's best thinking in light of current conditions. When necessary, the plan should be amended with proper public hearings. This does not imply capricious or lightly considered changes, but rather seeking to keep the plan up to date. This would best be done as a part of an annual review. In such a review, the City as a whole and the plan as a whole should be considered. The plan as adopted has all its various parts in equilibrium. In considering any specific proposed change the effect of the change on other aspects of the plan should be evaluated.

B. ZONING AND SUBDIVISION ORDINANCE REVIEW

Zoning

The Zoning Ordinance is the single most important means of translating the General Plan's proposals into action. The ordinance regulates the use of the land, population densities, land coverage, and heights of structures, requires off-street parking and off-street loading facilities, prescribes landscaping requirements and provides for design review. The ordinance consists of a map showing zoning district boundaries and a set of regulations, standards and administrative procedures. Although quarterly review of changes in district boundaries may be necessary to permit certain projects that conform with the plan, four major amendments to the Zoning Ordinance will be essential to carry out important plan objectives.

1. Hillside Regulations

The City recognizes that development in the foothills will take place - to protect and preserve these areas, continued formulation and adoption of major requirements regulating hillside development should encompass contour grading and construction, maximum variety of development pattern, and to provide density incentives to aid in insuring the best possible development and conservation of natural features and open space.

2. New Residential Zones

The Zoning Ordinance should be amended to include the proposed residential areas north of Paso Corto Road-Lone Tree Way and the developed areas south of the Highway 4. These new residential zones should specifically allow larger lot sizes and density bonuses where topography would preclude appropriate large lot development.

3. Residential Density Incentives

The plan shows higher density multi-family residential areas surrounding the downtown district. Most of these areas are now developed with older, single-family homes and therefore, the major objective of providing density bonuses should be to allow economical and progressive redevelopment to an attractive higher density downtown living district. A further objective should be to protect those single family areas and parcels especially of historical or unique architectural nature that remain from the deteriorating effects of overbuilding on parcels of insufficient size. Ordinance provisions should restrict conversions of existing single family homes to multiple family occupancies.

4. Open Space Zones

The Zoning Ordinance should be amended to include appropriate open space zones in order to preserve and enhance those designated areas from other uses. The areas would include regional, community and neighborhood parks, pedestrian and bike systems, scenic and natural landscape features and other open space utilized for visual relief.

The City should initiate a thorough review of all requirements in the existing ordinance for their applicability to the proposals of the General Plan. A basic reorganization of the ordinance would be appropriate for better utilization by the staff and the citizens.

Because land use in the unincorporated portions of the planning area is regulated by the County Zoning Ordinance, the City should request the Board of Supervisors to amend the County Zoning Map as necessary to implement the plan.

C. ZONING ORDINANCE AND GENERAL PLAN CONSISTENCY

The requirement that there be consistency between the zoning ordinance and the General Plan emphasizes the importance of clearly defining the purpose and nature of the zoning ordinance as having immediate force and effect on each parcel of land and the General Plan as a body of long range public policy. Although many general plans are becoming more comprehensive and at the same time more detailed, the plan is intended to provide a broad base of policy for guiding decisions. On the other hand, the Zoning Ordinance is a set of specific legal regulations which prescribe the various uses allowed within each zoning district in the jurisdiction. The range of uses allowed and the standards related to each district set forth in specific detail are controlling until changed through amendment procedures.

For this reason, there will be differences between the zoning map and the General Plan. The zoning map indicates the location and extent of zoning districts as applied, whereas the General Plan indicates the general extent of use areas and relationships between those areas. For example, the plan diagram may indicate functional areas such as neighborhood units with a range of residential densities, dwelling types and general guidelines for the arrangement of residential and residence serving uses within the neighborhood unit. In addition to review of the map and diagram, it is necessary to review the text of the General Plan to determine if land uses authorized by the Zoning Ordinance are consistent with the objectives, policies, general land uses and programs specified in the General Plan. Consistency of the policies in the General Plan and the text of the Zoning Ordinance should be clearly described.

Questions of type of use, intensity of use, characteristics of uses in relation to environmental values expressed in the General Plan should also be evaluated. Also requiring evaluation is the timing and sequence of change in use, particularly where the change is from a lower intensity to a higher intensity use. The sequence of change is particularly important and may be either covered in specific terms in the General Plan or inferred.

The Zoning Ordinance, being current and precise, reflects the existing phase of land development, but should gradually follow the General Plan into the future as appropriate in relation to timing and sequence of uses. Thus, it would be inconsistent with the plan to zone a large area of existing low intensity use to a more intensive use as shown in the General Plan, when the transition to the more intensive use would occur so gradually that scattered uses might result and contravene a General Plan policy calling for compact urban development. Even though the Zoning Ordinance may indicate uses different from those shown in the General Plan, the zoning in this case will carry out General Plan policies as to orderly development, and thus is consistent with the General Plan.

D. CAPITAL IMPROVEMENT REVIEW

A capital improvement program is most often a five or six-year schedule of needed public improvements, arranged according to priority. Costs and sources of financing are indicated. The Planning Commission reviews the program to determine whether the projects are consistent with the General Plan. The Commission also may suggest additional projects that it believes are needed. In order to avoid duplication or conflict, it is desirable that all public agencies, including school districts and other special districts, submit their capital improvement projects in the planning area for review. The first year's program is recommended to the Council for inclusion in the annual budget. Annually the schedule is revised, another year's program is added, and the Planning Commission screens the proposals again in its advisory role to the local legislative body.

E. REFERRALS

Mandatory referral is the procedure by which the Planning Commission reviews public land purchase or development programs for conformity with the adopted General Plan whether such actions have or have not previously been included in a capital improvement program. This important procedure, provided for in the State Planning Act, enables public improvements to proceed in accordance with the plan and helps to eliminate conflicts between proposals by

various City or County departments. It is recommended that the City adopt a policy of mandatory referral to the Planning Commission. It is extremely important that the Planning Commission be consulted early in all project planning to make mandatory referral effective.

F. PLAN LINES

Plan lines are an indication on an official map showing where future streets will be needed. When precise alignments for streets shown on the General Plan have been determined by engineering studies, plan lines should be established to prevent buildings from being constructed in future street rights-of-way. The plan lines also serve as reference lines from which to measure required site areas, setbacks, and required yard spaces.

G. PUBLIC INFORMATION

An adopted General Plan informs the citizen how the community proposes to guide development. The merchant knows where he can expect enough customers to support his business. The prospective home buyer knows whether his neighborhood will be protected from through traffic and whether it will be served by schools and play areas. If this plan makes sense to private landowners, their development activities will help carry it out. By demonstrating needs, the General Plan can do much to convince the community that street improvements, recreation facilities or public facilities are required. Public information on the General Plan helps promote public action in support of City goals.

H. ANNEXATION

In order to insure orderly development and to eliminate administrative problems in providing police and fire protection and other services, annexation would be necessary as areas currently vacant approach development. Compliance with the General Plan should be made a condition for approval and a primary factor with regard to a sphere of influence adopted by the Local Agency Formation Commission. Rezoning procedures as provided by the State Planning Law should be systematically pursued in unincorporated areas.

I. REDEVELOPMENT LAW

This program is the process of rehabilitating or rebuilding the older and deteriorating portions of the City. Zoning, subdivision control, capital improvement programming and the Housing Code guide the changes that are occurring in the community. Only the redevelopment program, however, can cause a direct change to occur in an existing developed neighborhood. The program ranges from redevelopment projects to rehabilitation efforts and conservation programs.

The Housing Element discussed areas of concern and identified areas that should be considered for the redevelopment process. Although many of the programs available to the process were of federal origin and the present financial constraints prevent expeditious use of such opportunities, it is expected that new forms of assistance such as block grants will be forthcoming. In addition, the State Redevelopment Act with its tax incremental financing program is available as well as locally funded activities such as Code Enforcement combined with Capital Improvement outlays.

J. SPECIAL STUDIES AND PROGRAMS

To enable the community to effectuate the General Plan, special studies and programs are available in addition to the specifics mentioned above. These are as follows:

1. Specific Plans

Provided by provisions of the State Planning and Zoning Law is a process by which a plan with precise details can be formulated, considered and adopted which will preserve rights-of-way, location of physical improvements, establish regulations and otherwise specifically guide public and private development in conformance with an adopted General Plan.

2. Environmental Impact Reports

Although this process is mandatory for all local, state and federal jurisdictions; the use of such reports can help identify potential damage to the environment, the socio-economic structure of the community or General Plan proposals and policies. The report process will also permit the community to suggest methods to mitigate such destructive forces.

3. District Reorganization

Under present statutes, special districts may be reorganized to provide more economical and equitable services as well as the elimination of duplication. The process affects the special districts; however, it would be advantageous for the City to encourage the examination and study of those districts adjacent to the City for the possible reorganization, consolidation or annexation to the City.

APPENDIX A

A. LEGISLATIVE REQUIREMENTS

General plans in the State of California have taken on a completely new meaning with adoption of legislation which has greatly strengthened the intent and authority of general plans. The State Planning and Zoning Law now requires each city and county to have a plan that provides a guide for future growth and community development. The State law specifically indicates that "the General Plan shall consist of a statement of development policies and shall include a diagram or diagrams and text setting forth objectives, principles, standards and plan proposals.

State legislation also requires in all general plans, elements dealing with open space, conservation, housing, safety, noise seismic safety, scenic highways, as well as the traditional elements of circulation and land use. Along with these required elements, in some cases go rather severe penalties for failure to adopt the elements. Of particular consequence which has strengthened and changed the meaning of general plans, was the adoption in 1971 of AB 1301 (Section 11549.5) of the State Business and Professions Code as amended by Chapter 1556, Statutes 1971). That legislation stipulated that a governing body shall deny approval of a final or tentative subdivision if it finds that the proposed subdivision is not consistent with applicable specific and general plans, including their elements.

Deadlines for the General Plan Elements as required by State Legislation are as follows:

DEADLINES FOR GENERAL PLAN ELEMENTS

<u>ELEMENTS</u>	<u>DEADLINES</u>
Land Use	Required since 1955
Circulation	Required since 1955
Housing	Required since 1969

<u>ELEMENTS</u>	<u>DEADLINES</u>
Conservation	December 31, 1973
Open Space (plan and program)	December 31, 1973
Seismic Safety	September 20, 1974
Noise	September 20, 1974
Scenic Highways	September 20, 1974
Safety	September 20, 1974
Consistency of the zoning ordinance with the general plan	January 1, 1974

1. Land Use Element

"A land use element which designates the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal facilities, and other categories of public and private uses of the land. The land use element shall include a statement of the standards of population density and building intensity recommended for the various districts and other territory covered by the plan. The land use element shall also identify areas covered by the plan which are subject to flooding and shall be reviewed annually with respect to such areas". (Government Code Section 65302 (a)).

2. Circulation Element

"A circulation element consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals and facilities, all correlated with the land use element of the plan". (Government Code Section 65302(b)).

3. Housing Element

"A housing element, to be developed pursuant to regulations established under Section 37041 of the Health and Safety Code, consisting of standards and plans for the improvement of housing and for provision of adequate sites for housing. This element of the plan shall make adequate provision for the housing needs of all economic segments of the community". (Government Code Section 65302(c)).

4. Conservation Element

"A conservation element for the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers, and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. That portion of the conservation element including waters shall be developed in coordination with any county-wide water agency and with all district and city water agencies which have developed, served, controlled or conserved water for any purpose for the county or city for which the plan is prepared." The conservation element may also cover:

- (a) The reclamation of land and waters.
- (b) Flood control.
- (c) Prevention and control of the pollution of streams and other waters.
- (d) Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.
- (e) Prevention, control and correction of the erosion of soils, beaches and shores.
- (f) Protection of watersheds.
- (g) The location, quantity and quality of the rock, sand, and gravel resources. (Government Code Section 65302 (d)).

5. Open Space Element

"On or before December 31, 1973 every city and county shall prepare, adopt, and submit to the Secretary of the Resources Agency a local open space plan for the comprehensive and long-range preservation and conservation of open space land within its jurisdiction." (Government Code Section 65302(e), 65560 et seq., and 65563).

It is the intent of the Legislature in enacting this article: Section 65562.

- (a) To assure that cities and counties recognize that open-space land is a limited and valuable resource which must be conserved wherever possible.
- (b) To assure that every city and county will prepare and carry out open-space plans which, along with state and regional open-space plans, will accomplish the objectives of a comprehensive open-space program. (Added by Stats. 1970, c. 19590, p. 3316, Section 15)

6. Seismic Safety Element

"A seismic safety element consisting of an identification and appraisal of seismic hazards such as susceptibility to surface ruptures from faulting, to ground shaking, to ground failures, or to the effects of seismically induced waves such as tsunamis and seiches.

The seismic safety element shall also include an appraisal of mudslides, landslides, and slope stability as necessary geologic hazards that must be considered simultaneously with other hazards such as possible surface ruptures from faulting, ground shaking, ground failure and seismically induces waves." (Government Code Section 65302(f)).

7. Noise Element

"A noise element in quantitative, numerical terms, showing contours of present and projected noise levels associated with all existing and proposed major transportation elements." These include but are not limited to the following:

- (a) Highways and freeways.
- (b) Ground rapid transit systems.
- (c) Ground facilities associated with all airports operating under a permit from the State Department of Aeronautics. (Government Code Section 65302(g)).

8. Scenic Highways Element

"The plan shall include a "scenic highway element for the development, establishment, and protection of scenic highways pursuant to the provisions of Article 2.5 (commencing with Section 260) of Chapter 2 of Division 1 of the Streets and Highways Code." (Government Code Section 65302(h)).

9. Safety Element

"A safety element for the protection of the community from fires and geologic hazards including features necessary for such protection as evacuation routes, peak load water supply requirements, minimum road widths, clearances around structures, and geologic hazard mapping in areas of known geologic hazard." (Government Code Section 65302.1).

10. Consistency of Zoning with the General Plan

"County or city zoning ordinances shall be consistent with the general plan of the county or city by January 1, 1974. A zoning ordinance shall be consistent with a city or county general plan only if:

- (a) The city or county has officially adopted such a plan; and
- (b) The various land uses authorized by the ordinance are compatible with the objectives, policies, general land uses and programs specified in such a plan.

Any resident or property owner within a city or a county, as the case may be, may bring an action in the Superior Court to enforce compliance with the provisions of subdivision (a). Any such action or proceedings shall be governed by Chapter 2 (commencing with Section 1084) or Title 1 of Part 3 of the Code of Civil Procedure. Any action or proceedings taken pursuant to the provisions of this subsection must be taken within six months of January 1, 1974, or within 90 days of the enactment of any new zoning ordinance or the amendment of any existing zoning ordinance as to said amendment or amendments.

In the event that a zoning ordinance becomes inconsistent with a general plan by reason of amendment to such a plan, or to any element of such a plan, such zoning ordinance shall be amended within a reasonable time so that it is consistent with the general plan as amended."
(Government Code Section 65860).

11. Coordination

Furthermore, the local planning law requires coordination with regard to the following:

1. Requires submittal of adopted open space elements to the Secretary of the Resources Agency (Section 65563).
2. Requires the housing element to be prepared pursuant to regulations established by the Department of Housing and Community Development (Section 65302(c)).

3. Requires State (and other agencies) responsible for any transportation facility to provide a statement (to city and county planning agencies) regarding present and projected noise levels associated with their transportation facilities (Section 65302(g)).
4. Requires planning agency to forward the General Plan, or amendment thereto, to the county planning agency and the Local Agency Formation Commission. (Section 65305 and 65306). The county "may" adopt the submitted city plan as a part of the county plan and the city may likewise adopt any applicable portion of the county plan.

APPENDIX B

PARTIAL LIST OF AGENCIES AND ORGANIZATIONS
CONTACTED IN PREPARING ANTIOCH GENERAL PLAN

1. City of Antioch, Community Development Department,
Fire, Police and Finance Departments and City Manager's
Office
2. Antioch Unified School District
3. Antioch Chamber of Commerce
4. Antioch Downtown Merchant Association
5. Antioch Historical Society
6. Antioch Airport
7. Contra Costa Community College District
8. Contra Costa County Planning Department
9. Housing Authority of the County of Contra Costa
10. Local Agency Formation Commission
11. Association of Bay Area Governments
12. East Bay Regional Park District
13. Contra Costa County Agriculture Agency
14. Contra Costa County Flood Control and Water
Conservation District
15. Contra Costa County Resource Conservation District
16. Eastern Contra Costa County Soil Conservation
District
17. Contra Costa County Water District
18. State of California, Office of Planning and Research
19. State of California, Department of Fish and Game
20. State of California, Department of Parks and Recreation
21. State of California, Department of Transportation
22. State of California, Regional Water Quality Control
Board
23. State of California, Department of Mines and Geology
24. State of California, Department of Water Resources
25. State of California, Department of Agriculture
26. U. S. Environmental Protection Agency
27. U.S. Department of Interior and Geologic Conditions
28. U.S. Department of Soil Conservation
29. U.S. Army Corps of Engineers
30. U.S. Department of Agriculture
31. U.S. Bureau of Mines
32. Bay Area Air Pollution Control District
33. Bay Area Rapid Transit District
34. Contra Costa Canal District Office
35. State Public Utilities Commission
36. Pacific Gas and Electric Company
37. Pacific Telephone and Telegraph Company
38. Standard Oil Company of California
39. Shell Oil Company
40. Audubon Society
41. Sierra Club
42. Southern Pacific Transportation Company
43. Atchison-Topeka and Santa Fe Railway

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PART I

TECHNICAL MATERIALS AND BACKGROUND STUDIES PREPARED AS PART OF THIS STUDY

The following materials have been prepared in conjunction with the General Plan and items 1-10 have been reviewed by the citizens' committee during the planning process:

1. "Community Attitude Survey"
2. "Land Use Analysis"
3. "Demographic and Economic Characteristics"
4. "Geological and Seismic Safety Element"
5. "Community Facilities"
6. "Housing Fact Sheet"
7. "Environmental Planning Process"
8. "Environmental Resource Inventory"
9. "Environmental Mapping Overlay System"
10. "Antioch Sketch Plan"
11. "Summary of General Plan Element"

Copies of the above materials are on file at the Department of Community Development in the Antioch City Hall. The maps and graphics which have been prepared in connection with the above materials have been incorporated into this General Plan where appropriate.

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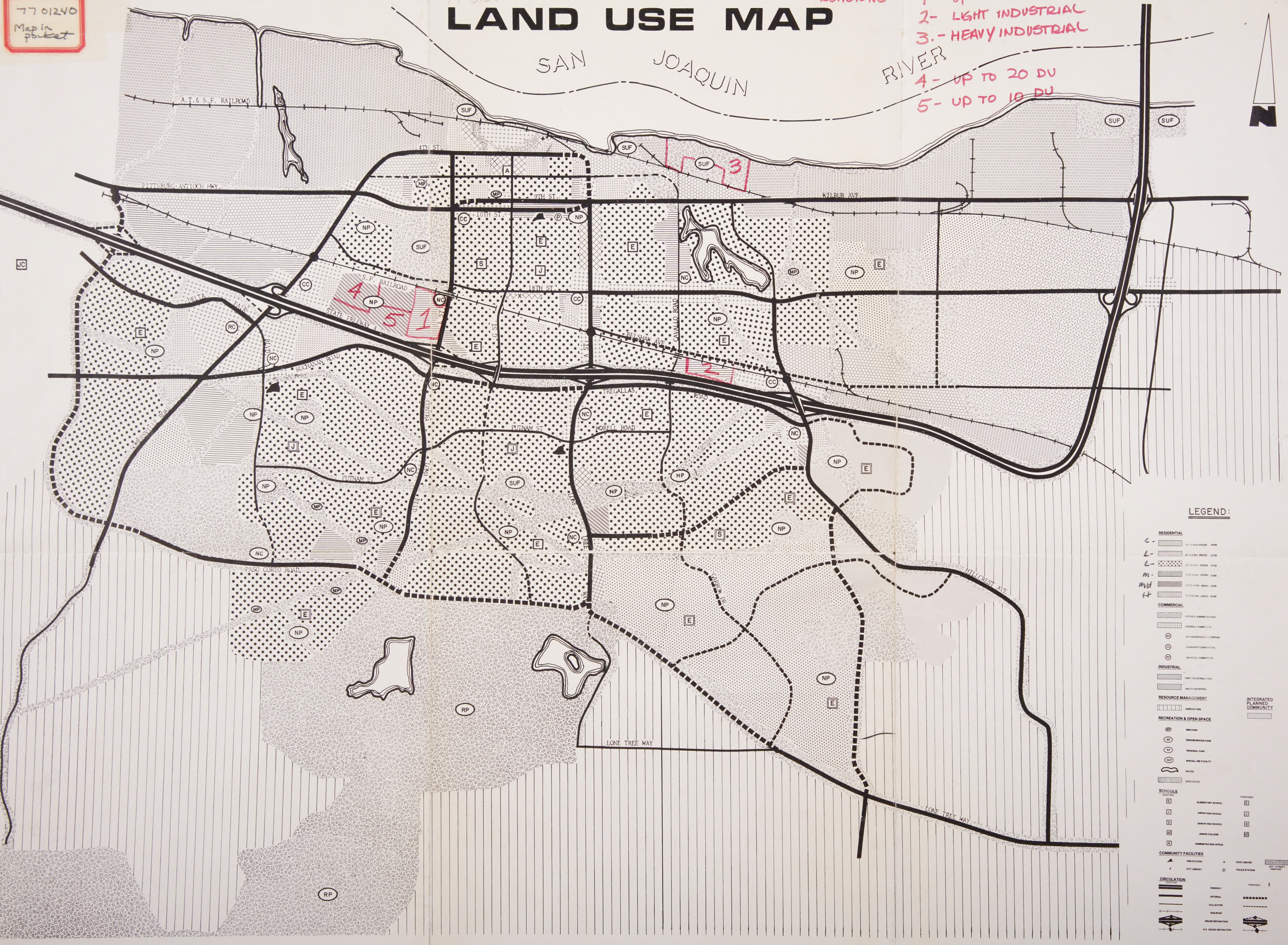
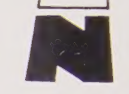
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Map in
pocket

LAND USE MAP

REVISIONS
1 - UP TO 20 DU
2 - LIGHT INDUSTRIAL
3 - HEAVY INDUSTRIAL
4 - UP TO 20 DU
5 - UP TO 10 DU

SAN JOAQUIN RIVER



LEGEND:

- RESIDENTIAL**
 - C- UP TO 5 DU/ACRE
 - L- UP TO 10 DU/ACRE
 - L- UP TO 15 DU/ACRE
 - M- UP TO 20 DU/ACRE
 - MH- UP TO 25 DU/ACRE
 - CH- UP TO 30 DU/ACRE
- COMMERCIAL**
 - CS- OFFICE & ADMINISTRATIVE
 - CC- GENERAL COMMERCIAL
 - NC- NEIGHBORHOOD COMMERCIAL
 - CC- COMMUNITY COMMERCIAL
 - RC- REGIONAL COMMERCIAL
- INDUSTRIAL**
 - LI- LIGHT INDUSTRIAL
 - HI- HEAVY INDUSTRIAL
- RESOURCE MANAGEMENT**
 - AG- AGRICULTURE
- RECREATION & OPEN SPACE**
 - MP- MINIPARK
 - NP- NEIGHBORHOOD PARK
 - RP- REGIONAL PARK
 - SP- SPECIAL USE FACILITY
 - W- WATER
 - OS- OPEN SPACE
- SCHOOLS**
 - E- ELEMENTARY SCHOOL
 - J- JUNIOR HIGH SCHOOL
 - S- SENIOR HIGH SCHOOL
 - C- COLLEGE
 - A- ADMINISTRATION OFFICE
- COMMUNITY FACILITIES**
 - FS- FIRE STATION
 - CL- CITY LIBRARY
 - CC- CIVIC CENTER
 - PS- POLICE STATION
- CIRCULATION**
 - FW- FREEWAY
 - AR- ARTERIAL
 - CO- COLLECTOR
 - BL- BALDWIN
 - GR- GRADE SEPARATION
 - RR- R.R. GRADE SEPARATION
- PROPOSED**
 - PR- PROPOSED
- INTEGRATED PLANNED COMMUNITY**
 - IPC- INTEGRATED PLANNED COMMUNITY

